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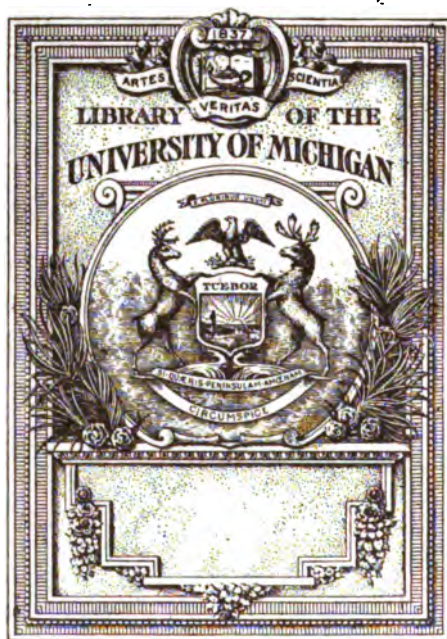
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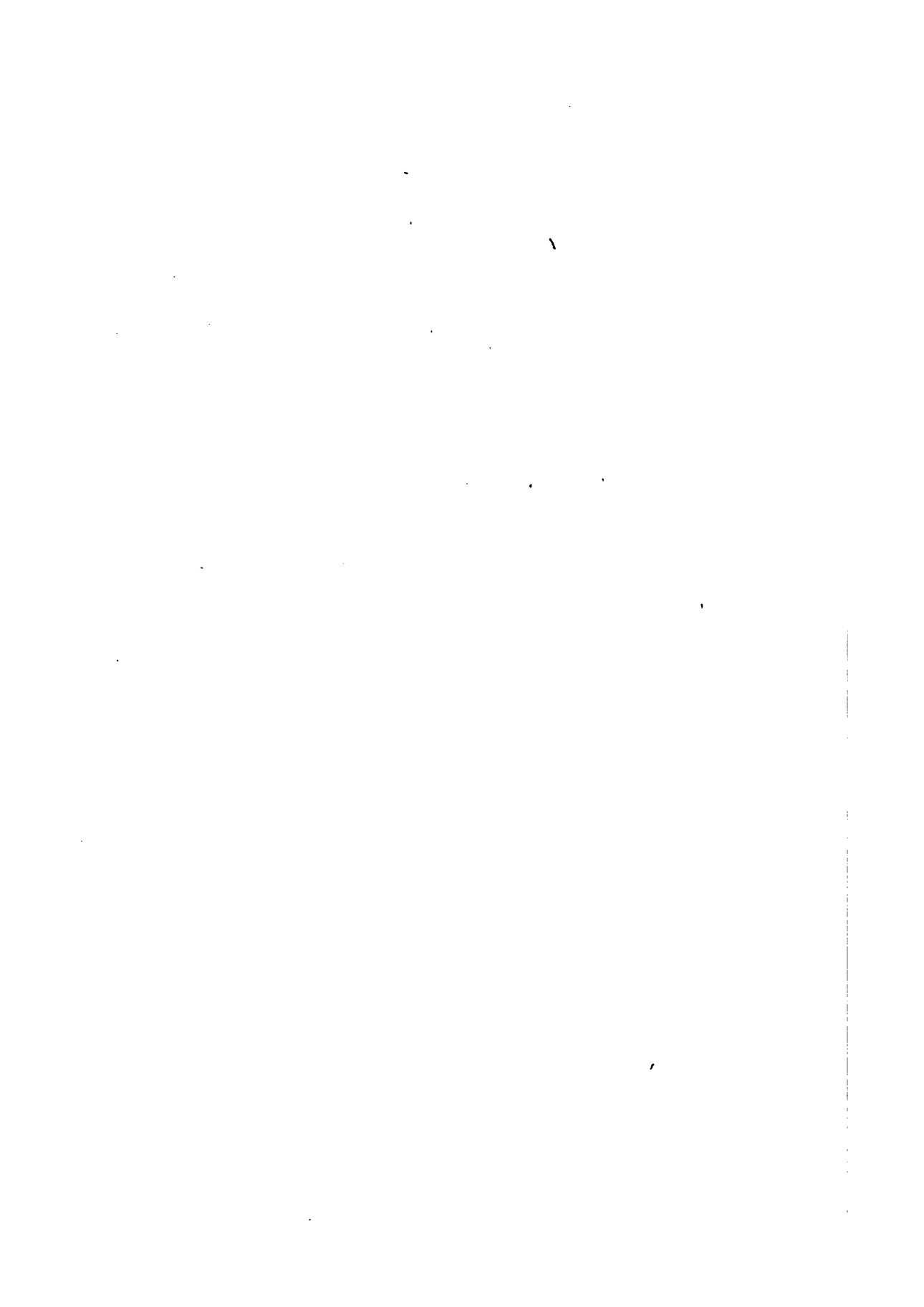
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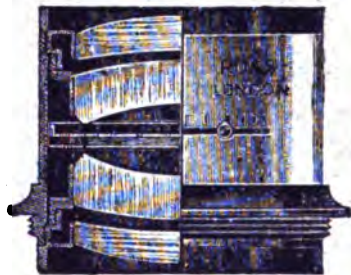
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PREFACE.

ESPITE the rival excitements of a year crowded with great achievements—the conquest of the air, the twice-found (?) Pole, *et cætera*—the pages of this twenty-fourth volume of THE AMERICAN ANNUAL OF PHOTOGRAPHY show that our magical art has lost nothing of its fascination and interest for all sorts and conditions of men. In variety of subjects and individuality of treatment, papers and illustrations alike offer a rich store of help and inspiration for the coming year.

It was a happy thought in which the ANNUAL had its beginning—to end each passing year with this gathering of enthusiasts from the four corners of the world, each bringing of his best for the festival. Greeting, and thanks—from my heart—to all who have so generously given me of their goodwill. E pluribus unum!

JOHN A. TENNANT.

NEW YORK, November, 1909.

TABLE OF CONTENTS.

Contributed Articles.

| | PAGE |
|--|------------------------|
| Lenses, Pictorially Considered. By A. Lockett..... | <i>Illustrated</i> 9 |
| Limited Scale Design. By Frank E. Huson..... | <i>Illustrated</i> 17 |
| Color and Photography. By C. E. Kenneth Mees, D.Sc., F.C.S..... | 20 |
| Mercuric Iodide Intensifier. By Henry F. Raess..... | 25 |
| Lantern Slide Making. By Arthur E. Mayer..... | 28 |
| Mats and Frames for Photographs. By J. Arthur H. Hatt..... | 32 |
| Screen Plate Color Photography. By Hugh C. Knowles..... | 38 |
| A Plea for Honesty. By J. Will Palmer..... | 42 |
| The Transportation of Photographs. By Jere Montague..... | <i>Illustrated</i> 46 |
| The Hands in Portraiture. By Chas. Stillman Taylor..... | <i>Illustrated</i> 50 |
| Pictures in Sequence. By C. H. Claudy..... | 57 |
| Exposure and Development of Telephoto Negatives. By Edgar Clifton..... | 64 |
| Experimenting. By J. C. Hegarty..... | 67 |
| Depth of Focus. By J. A. Anderson..... | <i>Illustrated</i> 73 |
| Carbon Printing—A Visible Image. By Walter W. Lakin..... | 82 |
| Photographing Water Wonders. By Wilson A. Bentley..... | <i>Illustrated</i> 84 |
| Prints from Weak Negatives. By George F. Holman..... | <i>Illustrated</i> 87 |
| Flashlight vs. Daylight. By Robert W. Tebbs..... | <i>Illustrated</i> 91 |
| Carbon Printing for Beginners. By John Dove..... | 94 |
| Color Photography as a Paying Proposition. By H. F. Perkins..... | 102 |
| Traveling Sheep. By Walter Burke, F.R.P.S..... | <i>Illustrated</i> 105 |
| Some Photographic Crises. By C. A. Zimmerman..... | 110 |
| The Point of View. By C. M. Giles..... | 114 |
| Photographic Economics. By Charles E. Fairman..... | 116 |
| A New Year Suggestion. By Henry C. Delery..... | <i>Illustrated</i> 120 |
| Ozobrome Oil Printing. By Thomas Manly, F.R.P.S..... | 126 |
| My Experience with the Autochrome Plate. By H. O. Klein, F.R.P.S..... | 130 |
| A Diaphragm and Shutter for Pinhole Work. By James Thomson..... | 134 |
| Panchromatic Plates for Holiday Work. By J. Dudley Johnston..... | <i>Illustrated</i> 137 |
| Stereoscopic Photography. By H. W. Hales..... | <i>Illustrated</i> 144 |
| Plain Paper Printing. By G. T. Harris, F.R.P.S..... | <i>Illustrated</i> 148 |
| Photography for Explorer and Sportsman. By H. M. Lomas, F.R.G.S..... | <i>Illustrated</i> 156 |
| The Hand Camera in the Lunch Hour. By C. C. Whitenack..... | 162 |
| Toning Platinum Prints. By John Beeby..... | 166 |
| Shutters. By E. G. Boon..... | 168 |
| The Picturesque in Spain. By Robert E. M. Bain..... | <i>Illustrated</i> 170 |
| Groups and Genre Subjects. Compiled by J. W. Little..... | 174 |
| More About Lantern Slides. By Richard T. Jeffcott..... | <i>Illustrated</i> 189 |
| Points in Outdoor Portraiture. By W. H. Weston..... | <i>Illustrated</i> 198 |
| Photographic Might-Have-Beens. By W. J. Farthing..... | 201 |
| Enlarged Negatives or Bromide Enlargements. By W. H. Zerbe..... | 208 |
| Night Photography. By H. Powell Higgins..... | <i>Illustrated</i> 211 |
| Conveying the Sense of Motion. By William Findlay..... | 214 |
| From a Hobby to a Business. By Richard T. Jeffcott..... | <i>Illustrated</i> 219 |
| Hunting Buffaloes with a Camera. By M. O. Hammond..... | <i>Illustrated</i> 229 |
| Photographing Light. By John Chislett..... | <i>Illustrated</i> 233 |
| In a Surrey Pinewood. By Russell Burchall..... | <i>Illustrated</i> 238 |
| Night Photography. By Frank A. Rugg..... | <i>Illustrated</i> 241 |
| The Simplified Autochrome Process. By Maximilian Toch..... | 245 |
| The Present Status of Orthochromatics. By M. D. Miller..... | <i>Illustrated</i> 249 |
| Night Photography. By John Royd..... | 252 |
| Pourquoi? By Henry Troth..... | 258 |
| Flower Photography. By Harry D. Williar..... | <i>Illustrated</i> 266 |
| Specialism and Special Subjects. By Hy. Erle Cooper..... | <i>Illustrated</i> 273 |
| Washing for Permanency. By Geo. D. Jopson..... | 278 |
| Commercial Photography. By George Radcliffe..... | 280 |
| Photographing Clouds. By G. Cobb Smith..... | 285 |
| The Development of Snow Pictures. By George Ferguson..... | 290 |
| The Dark Room Table. By Irving A. Greer..... | 292 |
| Home Interiors. By R. B. Greene..... | 294 |
| Simple Weighing and Measuring. By E. A. Turner..... | 298 |
| Glycerine Development for Platinotypes. By G. H. Hutchins..... | 302 |
| The Crystoleum Picture. By Frederick Rogers..... | 306 |
| Failures and Remedies in Bromide Enlargements. By G. E. Tubbs..... | 310 |
| American Annual Formulary..... | 313 |
| Chemical Elements: Their Names and Symbols..... | 319 |
| Table of Comparative Plate Speed Numbers..... | 319 |
| Table of Distances for Use in Focusing..... | 320 |
| Length of Studio Required for Different Lenses..... | 320 |
| Table of Distances for Enlarging and Reducing..... | 321 |
| United States Standard Weights and Measures..... | 322 |
| English Weights and Measures..... | 323 |
| U. S. Diaphragm Numbers and F Equivalents..... | 324 |
| American Photographic Societies..... | 325 |

Index to Subjects.

| PAGE | PAGE |
|--|--|
| Apparatus, Defects in..... 258 | Metol Formulæ31, 290 |
| Autochrome Process...40, 102, 130, 245 | Metric System 297 |
| | Modifying Platinums 303 |
| | Motion, Photographing 214 |
| Backing, Non-halation.....282, 317 | |
| Bottles and Glassware 280 | Night Photography...211, 241, 252, 276 |
| Borneo, Photography in..... 157 | Non-halation Backing 282 |
| Bromide enlarging 310 | |
| Bromoil 128 | Omnicolore Plates 39 |
| Buffaloes, Photographing 229 | Orthochromatics137, 249 |
| | Ortol Formulæ 314 |
| Calendar, A Photographic..... 120 | Outdoor Portraiture 198 |
| Carbon Printing82, 94 | Outdoors at Night 251 |
| Clouds 285 | Ozobrome Oil Process..... 126 |
| Color Photographing20, 137, 249 | |
| Color Photography38, 102, 245 | Packing Prints 47 |
| Color Screens143, 249 | Pictorial Photography, |
| Commercial Work219, 280 | 9, 17, 42, 105, 210, 211, 214 |
| Copying at Night..... 256 | Pinhole Photography 134 |
| Crystoleums 306 | Plain Paper Printing..... 148 |
| | Plate Speeds 319 |
| Darkroom Light 227 | Platinotypes, Development 302 |
| Darkroom Table 292 | Platinotypes, Toning..... 166 |
| Decorative Photography 120 | Point of View 114 |
| Depth, Focal 73 | Portraiture50, 198 |
| Developers30, 290 | Pyro-metol 31 |
| Dew, Photographing 84 | Pyro Formulæ 313 |
| | |
| Economies 116 | Quinomet 245 |
| Elements, The 319 | |
| Enlarging208, 310, 321 | Reducing Negatives288, 311, 315 |
| Experimenting 67 | Retouching Media 317 |
| Exposure 64 | Rodinal39, 290 |
| | |
| Farmer's Reducer 315 | Salting Plain Papers..... 150 |
| Figures in Groups 185 | Screen, Color Plates 38 |
| Fireworks, Photographing 241 | Sensitizers, Carbon83, 95 |
| Fixing Baths 314 | Series, Pictures in..... 57 |
| Flashlight Work91, 254 | Sheep Pictures 105 |
| Flower Photography 266 | Shutters, Exposure 168 |
| Focal Distances 320 | Silverware 280 |
| Focus, Depth of..... 73 | Snow Crystals 86 |
| Forest, Photography in a..... 238 | Snow Pictures 290 |
| Frames 34 | Societies, List of..... 325 |
| | Spain, Pictorial 170 |
| Glycerine Development 302 | Specialism 273 |
| Groups by Flashlight..... 254 | Sport, Photography and 156 |
| Groups and Genre..... 174 | Street Work at Night..... 276 |
| | Stereoscopic Work 144 |
| Hands, The..... 50 | Stale Plates and Papers..... 117 |
| Hand Camera 162 | Studio, Length of..... 320 |
| Historical Records 201 | |
| | Telephoto Work 64 |
| Intensification25, 288, 314 | Thames Color Plate 39 |
| Interiors91, 294 | Toning Plain Paper..... 150 |
| Interiors, Flashlight 254 | Toning Platinums 166 |
| | |
| Lantern Slides28, 189 | U. S. Diaphragms 324 |
| Lenses9, 204 | U. S. Standard Measures..... 322 |
| Lens, To Clean a..... 318 | |
| Light, Photographing 233 | Varnishes, Various 317 |
| | Visible Carbon Image..... 82 |
| Mailing Photographs 46 | |
| Mats for Photographs..... 32 | Washing Prints 278 |
| Mat for Lantern Slides..... 195 | Water Forms 84 |
| Media, Retouching 317 | Weak Negatives 88 |
| Mercuric Iodide 25 | Webs, Spiders' 84 |
| | Weights & Measures 297 |

Index to Authors.

| PAGE | | PAGE |
|----------|-----------------------------|------|
| 73 | Anderson, J. A..... | 278 |
| 170 | Bain, Robt. E. M..... | 130 |
| 166 | Beeby, John..... | 38 |
| 84 | Bentley, Wilson A..... | 82 |
| 168 | Boon, E. G..... | 174 |
| 252 | Boyd, John..... | 9 |
| 238 | Burchall, Russell..... | 156 |
| 105 | Burke, Walter..... | 126 |
| 233 | Chislett, John..... | 28 |
| 57 | Claudy, C. H..... | 20 |
| 64 | Clifton, Edgar..... | 249 |
| 273 | Cooper, Hy. Erle..... | 46 |
| 120 | Delery, Henry C..... | 42 |
| 94 | Dove, John..... | 102 |
| 116 | Fairman, Chas. E..... | 280 |
| 201 | Farthing, W. J..... | 25 |
| 290 | Ferguson, George..... | 306 |
| 214 | Findlay, William..... | 241 |
| 114 | Giles, C. M..... | 285 |
| 294 | Greene, R. B..... | 50 |
| 292 | Greer, Irving A..... | 91 |
| 144 | Hales, H. W..... | 134 |
| 229 | Hammond, M. O..... | 245 |
| 148 | Harris, G. T..... | 258 |
| 32 | Hatt, J. Arthur H..... | 310 |
| 67 | Hegarty, J. C..... | 298 |
| 211 | Higgins, H. Powell..... | 198 |
| 87 | Holman, George F..... | 162 |
| 17 | Huson, Frank A..... | 266 |
| 302 | Hutchins, G. H..... | 208 |
| 189, 219 | Jeffcott, R. T..... | 110 |
| 137 | Johnston, J. Dudley..... | |
| | Jopson, Geo. D..... | |
| | Klein, H. O..... | |
| | Knowles, Hugh C..... | |
| | Lakin, Walter W..... | |
| | Little, J. W..... | |
| | Lockett, A..... | |
| | Lomas, H. M..... | |
| | Manly, Thomas..... | |
| | Mayer, Arthur E..... | |
| | Mees, C. E. Kenneth..... | |
| | Miller, Malcolm D..... | |
| | Montague, Jere..... | |
| | Palmer, J. Will..... | |
| | Perkins, H. F..... | |
| | Radcliffe, George..... | |
| | Raess, Henry F..... | |
| | Rogers, Frederick..... | |
| | Rugg, Frank A..... | |
| | Smith, G. Cobb..... | |
| | Taylor, Chas. Stillman..... | |
| | Tebbs, Robert W..... | |
| | Thomson, James..... | |
| | Toch, Maximilian..... | |
| | Troth, Henry..... | |
| | Tubbs, G. E..... | |
| | Turner, E. A..... | |
| | Weston, A. W. H..... | |
| | Whitenack, C. C..... | |
| | Williar, Harry D..... | |
| | Zerbe, W. H..... | |
| | Zimmerman, C. A..... | |

Index to Illustrators.

| PAGE | | PAGE |
|-------------------------|----------------------------|---------------|
| 170, 172 | Bain, Robert E. M..... | 109 |
| 27, 136 | Baker, F. C..... | 236 |
| 197, 259 | Bcam, George L..... | 155 |
| 29, 100, 112, 124, 163 | Beeby, John..... | 201, 204 |
| 16, 167 | Bell, Curtis..... | 238 |
| 281 | Bennett, Harold M..... | 119, 131 |
| 84, 85, 86 | Bentley, Wilson A..... | 72, 177, 181 |
| 45, 179 | Bodine, Margaret..... | 126, 235, 311 |
| 9, 57 | Bourgeois, Cleo. S..... | 144 |
| 116, 160 | Bray, E. S..... | 97, 287 |
| 143 | Broden, Thomas F..... | 232 |
| 240, 243, 247 | Brook, H. H..... | 55 |
| 99, 145 | Brown, Fedora E. D..... | 243 |
| 87, 94 | Brown, Geo. E..... | 213 |
| 275 | Bull, Dr. Geo. C..... | 89 |
| 276 | Broadwell, W. H..... | 41 |
| 196, 277 | Bruce, R. S..... | 17, 263 |
| 237, 239 | Burchall, Russell..... | 185 |
| 23, 105, 107 | Burke, Walter..... | 220, 222, 225 |
| 260, 261 | Burnie, R..... | 305 |
| 37 | Cazneaux, Harold..... | 137, 141, 142 |
| 284 | Child, W. B..... | 175 |
| 234 | Chislett, John..... | 309 |
| 149, 291 | Clarke, C. F..... | 59, 127 |
| 73, 255 | Claypole, Ernest..... | 312 |
| 101, 147, 162, 207 | Cohen, Edgar A..... | 45 |
| 302 | Colman, Flora M..... | 12, 14 |
| 19, 31 | Conkling, O. C..... | 156, 159 |
| 184 | Conyers, H. B..... | 200 |
| 49 | Cooke, Helen W..... | 83, 251 |
| 273 | Cooper, Hy. Erle..... | 188 |
| 111, 264 | Dannatt, A. Keith..... | 248 |
| 121 | Delery, Henry C..... | 183 |
| 115, 133 | Doran, S..... | 279 |
| 50, 51, 52, 53, 66, 153 | Duhrkoop, R..... | 272 |
| 46, 71, 246 | Dunning, E. G..... | 102 |
| | Eickemeyer, R..... | |
| | Eisen, Gustav..... | |
| | Eitel, Theo..... | |
| | Farthing, W. J..... | |
| | Fitler, L. J..... | |
| | Fleckenstein, Louis..... | |
| | Gill, William..... | |
| | Gimeno, A. Gomez..... | |
| | Hales, H. W..... | |
| | Hall, Henry..... | |
| | Hammond, M. O..... | |
| | Hargett, A. B..... | |
| | Hendrickson, H..... | |
| | Higgins, H. E. Powell..... | |
| | Holman, George F..... | |
| | Hoppe, E. O..... | |
| | Huson, Frank E..... | |
| | Hutchinson, Jean M..... | |
| | Jeffcott, R. T..... | |
| | Johnson, Belle..... | |
| | Johnston, J. Dudley..... | |
| | Kilmer, T. W..... | |
| | Knafl & Bro..... | |
| | Knox, W. T..... | |
| | Kough, C. C..... | |
| | Lewis, Nina..... | |
| | Lockett, A..... | |
| | Lomas, H. M..... | |
| | Lifshey, S. H..... | |
| | Mahony, Mrs. D..... | |
| | Matthews, Kate..... | |
| | Miller, M. D..... | |
| | Nicholson, J. W..... | |
| | Pike, Oliver G..... | |
| | Radford, Fred..... | |
| | Redfield, R. S..... | |

Index to Illustrators—Continued.

| | PAGE | | PAGE |
|-------------------------|-----------------|--------------------------|--------------------|
| Reece, Jane | 165 | Taft, Russell W. | 61 |
| Reilly, John J. | 186 | Tauxe, A. | 283 |
| Rice, W. S. | 33 | Tebbs, Robert E. | 90, 91, 93 |
| Rugg, Frank A. | 241, 242 | Walburn, A. W. | 24 |
| Schneid, Max | 293 | Wanless, Chas. E. | 173 |
| Schon, Basil | 289 | Weil, Mathilde | 174 |
| Seiler, Jos. L. | 164 | Weston, A. W. H. | 198 |
| Serin, V. | 129 | Whitehead, John M. | 109 |
| Sleeth, Jr., R. L. | 265 | Wilke, J. F. | 130, 161 |
| Smith, Kate | 35, 187 | Willard, Mrs. E. W. | 63 |
| Sorensen, Th. G. | 26, 67, 69, 299 | Williar, Harry D. | 215, 267, 269, 271 |
| Steele, Louis J. | 104, 125 | Willis, Edith L. | 43 |
| Stevenson, Hilda | 117 | Zerbe, W. H. | 207, 200 |

Index to Advertisers.

| | PAGE |
|--|--------------------------|
| Adams, J. F. | xlvi |
| Albemarle Paper Mfg. Co. | Insert after xxiv |
| American Aristo. Division. | Fourth Cover |
| AnSCO Co. | i—iv |
| Artura Photo Paper Co. | xxix |
| Bausch & Lomb Optical Co. | xxv |
| Berlin Aniline Works. | xi |
| Bingham Co., The | xlv |
| British Journal Almanac | xlv |
| Burke & James | Insert after iv |
| Carmichael, Percival. | Third Cover |
| Century Camera Co. | xviii |
| Cooper & Co., Charles M. | xlv |
| Cramer Dry Plate Company. | xli |
| Eastman Kodak Co. | ix—xvi |
| Fallowfield, Jonathan | xxx |
| Folmer & Schwing Division. | xviii |
| Frank & Son, James | xlv |
| Gennert, G. | xlvii—lvi |
| Goerz American Optical Co., C. P. | Insert after viii |
| Hammer Dry Plate Co. | v |
| Higgins & Co., Charles M. | xlv |
| Kilborn Photo Paper Co. | Insert after xx |
| Lewis, J. L. | xxvi |
| Levy, Max | xxvii |
| Mallinckrodt Chemical Works | xlii |
| Meyrowitz, E. B. | xxviii |
| Milton Bradley Company | xlii |
| Mittineague Paper Co. | Insert after xx |
| Multi-Speed Shutter Co. | xxii—xxiii |
| Murphy, Inc., George. | Second Cover; xxxi—xxxix |
| New York Camera Exchange. | xxiv |
| Niagara Paper Mills | xlv |
| Robey, French Co. | xix |
| Rochester Optical Division | xx—xxi |
| Seed Dry Plate Co. | xvii |
| Simplex Intensifier Co. | xlv |
| Standard Paper Mfg. Co. | Insert after xxxiv |
| Sweet, Wallach & Co. | xli |
| Taprell, Loomis & Company | xlii |
| Taylor, Taylor & Hobson, Ltd. | xlii |
| Tennant & Ward. | vi—viii |
| Thompson & Co., A. T. | xliii |
| Watson & Sons, Ltd., Wm. | xliii |
| Wrenn Paper Co. | Insert after xlv |

REFERENCE CALENDAR FOR THREE YEARS.

1909

| | S | M | T | W | T | F | S | | S | M | T | W | T | F | S | | S | M | T | W | T | F | S |
|-------|----|----|----|----|----|----|----|----|---|---|---|---|---|---|---|--|---|---|---|---|---|---|---|
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| Feb. | | 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | | | | | | | | | |
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| April | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | | | | | | | | | | | | | |
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DORIS.

Cleo S. Bourgeois.

The American Annual of Photography .. 1910

LENSES, PICTORIALY CONSIDERED

By A. LOCKETT.

IT almost needs an apology to mention so obvious a fact as the necessity of employing a lens suitable for the size of plate used. We know what happens if we try to take a whole-plate photograph with a quarter-plate lens. The latter is not made to illuminate, or cover, so large a surface, and there will be a blank margin all round the negative. Yet photographers do sometimes expect to get more work out of their lens than it is made to give, although they go about it in an indirect way. For instance, with a cheap lens that will barely cover a quarter-plate, a subject which calls for a great rise of front is undertaken. This is really an insidious attempt to compel the lens to illuminate a larger circle than its maker ever intended it to, and the ill-used objective will retaliate by giving dark corners or a bare patch at the bottom of the picture. The modern anastigmat has an advantage in this respect over the older forms of lenses. When stopped down, it can be used for a larger-sized plate, and will give good definition to the edges of the photograph with any reasonable amount of rise to the front.

Then there is the scale of the photograph. That has nothing to do with the size, for two pictures of the same size may be on quite a different scale. For example, a cottage may be so large, as photographed, that it fills the whole of the plate; or

so small that a good deal of the surrounding country and an expanse of roadway are also shown. In these two photographs, the cottage would be said to be on a different scale, and yet the pictures might both have been taken from the same distance and standpoint, the only difference being in the focal length of the lens employed. Thus, it is evident that, altogether independent of how far the camera is from the subject, the focus of the lens has an important effect upon the scale of the photograph and the amount of subject included.

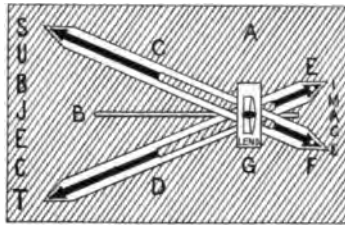


FIG. 1.

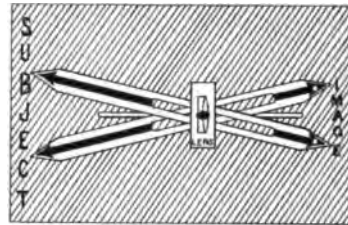


FIG. 2.

Figs. 1 and 2 illustrate a simple contrivance which the writer has found useful to demonstrate the above fact. It consists of a gray card, A (Fig. 1), having a slot, B, cut lengthwise in the middle. Two narrow, pointed strips of white cardboard, C and D, with slots cut in them as shown, are pivoted at one end to the gray card by means of brass pins or paper-fasteners, E and F. A small rectangular card, G, with a drawing to represent the lens, has a wooden peg in its centre which passes through all three slots and is movable to and fro. The peg is prevented from coming out by a pin through the back end. The arrows on the two narrow white strips stand for the rays of light, which cross in the lens; while the brass pins to which the strips are pivoted indicate the position of the focusing screen.

If the peg is moved nearer to the screen to show the position of an imaginary short focus lens, as in Fig. 1, the rays of light will diverge a good deal and will include a wide angle of view. If, on the other hand, the peg is moved further away from the screen, to illustrate the case of a long focus lens (Fig. 2), the angle made by the rays will become more and more narrow and will include less of the subject. Since,

in both cases, the same size plate is covered, it follows that the long focus lens, which gives less subject on the plate, must render that portion on a larger scale; while the short focus lens, which gives more of the subject, naturally shows everything on a smaller scale. It is obvious that a long focus lens has the advantage that we need not approach very near to the subject in order to get it sufficiently large on the plate.

We occasionally hear it said that the focal length of the lens has an effect on the perspective of the photograph. A long focus lens is stated to give better perspective than one of short focus. This is not precisely correct. A short focus lens, as we have seen, will show more of the subject, rendering everything on a smaller scale; and when that is the case the foreground or the nearer objects may seem to us exaggerated, or out of proper perspective. They are not really so, however; it is only that the lens is showing us more of the subject than would be noticed at one time by the human eye, and to our inexperienced sight the result is unusual and strained. In reality the perspective is quite correct, and if the central part only of the wide-angle picture were to be enlarged, it would give exactly the same perspective as that of the larger scale image taken from the same standpoint by a long focus lens.

It may, perhaps, be thought that a case has been made out, so far, for giving our preference to the long focus lens for pictorial work. To a certain extent that is so, and many of our best workers prefer a long focus lens for most purposes. There is, however, another side to this question. It is always easier to trim away from the photograph anything that is not wanted than to add on what is absent. There will be occasions when, with a long focus lens, we wish that we had obtained a little more of the subject, to one side or the other, and have perforce to do without it. The short focus lens would have given us this extra matter, and anything over and above that could readily be trimmed away.

Where enlargements are to be made from the negatives, the writer is inclined to recommend a short—or at any rate a medium—focus lens in preference to one of long focus. We can always enlarge from just the part that is required, and have a much wider choice of composition and arrangement.

Also, and this is worth thinking of, a short focus lens has much greater depth of definition than a long focus lens; that is to say, there is a more extensive range within which objects at different distances will be in focus at the same time, and consequently less stopping down is required. The long focus lens has the drawback that we cannot get both distant and



SUBURBAN
SNOWDRIFTS.

A. LOCKETT.



A SUMMER
SHOWER.

A. LOCKETT.

near object in focus at once, unless we stop down. Stopping down means loss of breadth and roundness, so that we must be content either to lose these desirable qualities, or else to tolerate a certain fuzziness in part of the picture—a fuzziness which, in good hands, may be pictorially rather a merit than otherwise.

The illustration, "A Summer Shower," given above, is an example of the effect produced by a long focus lens used nearly at its full aperture. It will be seen that part of the foreground is in decidedly sharper focus than the rest of the print. The difference would have been greater still if the foreground had not purposely been focused rather less sharply

than was possible. By way of contrast, "Suburban Snow-drifts" (Page 12) is a picture which we can tell at once was taken with a short focus lens, not only because of the rather wide angle included, but on account of the remarkably even definition in the various planes or distances.

There is yet another way in which the nature or quality of the lens may affect the photograph. The brilliancy of the picture depends to some extent not only on good workmanship in the lens, but on the number of air spaces and reflecting surfaces which it contains. A simple landscape lens has no air spaces and only two reflecting surfaces, and should theoretically give the most brilliant image. Fact obligingly agrees with theory, and for many purposes the single lens is employed in preference to any other. For purely landscape work, where any slight linear distortion at the edges is of no consequence, and rapidity and the best of definition are not required, a single achromatic lens of good quality will give unexceptionable results.

But there are other qualities in a photograph that are more desirable than mere brilliancy, and the expensive lens with its additional optical corrections and advantages scores heavily in the end. We may, for example, place breadth against brilliancy. The larger the aperture, the greater the impression of breadth, relief and roundness. The best of single lenses rarely has an aperture larger than $f/11$, so that in respect of these qualities it cannot compete with an anastigmat having an aperture of $f/5$ or $f/6$, nor even with a rectilinear at $f/8$. If we are to choose between brilliancy and breadth, the latter is certainly the most valuable from an artistic point of view.

There is a further consideration. Even if we sacrifice a little brightness of the image, through the extra glass surfaces and air space or spaces of the rectilinear or anastigmat, we gain in clearer definition, in consequence of the absence, through improved optical construction, of various aberrations and defects that are present in the single lens. This better definition and clearness is a very good substitute for brilliancy, if, indeed, it is not practically an equivalent.

Some of our most attractive and effective subjects are met with in a dull light, or late in the day. The anastigmat, with



TOMB OF LORD BOUCHIER.
WESTMINSTER ABBEY.

A. LOCKETT.



LADY CHAPEL,
ST. AUGUSTINE'S
THANET.

A. LOCKETT.

its large aperture, scores here both over the single lens and the rectilinear, and renders it possible to secure many pictures that could not otherwise be attempted. For general work; the anastigmat is undoubtedly to be preferred before all other lenses. While capable of doing everything that the rectilinear or single lens will do, it has the following reserve merits: larger aperture, which means quicker exposures, greater opportunities for working in a bad light, and added possibilities of securing breadth and roundness when these are required; finer definition at will, which while not always a pictorial desirability is occasionally very useful, especially in negatives to be enlarged from; and, thirdly, better covering power, which means that we shall not get any badly illuminated corners to our pictures but shall have uniform definition and clearness all over the plate, also that when stopped down the lens will cover a larger plate, or will permit a great rise of front. The illustration, "Lady Chapel, St. Augustine's, Thanet" (Page 14), exhibits the last mentioned good trait of the anastigmat. Though the rising front did full duty and the lens was not stopped down beyond $f/11$, the admirable definition all over will be noted. This picture may be compared with "Tomb of Lord Bouchier, Westminster Abbey" (page 14), which was taken with a rapid rectilinear at $f/22$. It will be seen that the definition of the latter lens, although fairly satisfactory, is inferior at $f/22$, and on a far less difficult subject, to that of the anastigmat at $f/11$.

For all-round work perhaps it is best to purchase a rather short focus anastigmat of the convertible type, the front and back combinations of which can be used separately as well as together. We shall then have at will a long focus, short focus, and possibly also a medium focus, in the same lens.

Second to the anastigmat, a good rapid rectilinear is the best lens for general work. It should be seen that it is a good one, because at the present time there are many common and cheap rectilinears sold, which are really inferior in their results to a high-class single lens. In all lens matters quality tells. The labor spent in extra fine grinding, delicate polishing and careful adjustment of the different parts means better definition and a clearer and more truthful image. The lower grade lenses are sometimes made of poor and inferior glass, while

it is not even unknown for them to be moulded instead of ground. Such lenses cannot, of course, be expected to give an image that can in any way compare with that yielded by the exquisitely finished product of a good maker.



PORTRAIT.

CURTIS BELL.



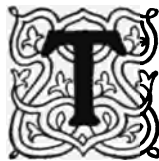
SUNSET O'ER LONDON.

FRANK E. HUSON.

LIMITED SCALE DESIGN

Some Suggestions to Pictorialists

By FRANK E. HUSON.



THE keystone of success in pictorial photography is simplicity, not only simplicity or singleness of motive, which as everyone knows is essentially necessary, but simplicity of tone. Generally speaking the fewer tones and therefore the shorter scale used in the production of a pictorial photograph the more likely it is to be forceful and immediately successful. For instance, success is more likely to accrue by keeping within a few light tones if white paper is our highest light, and in the opposite direction using a few low tones if such a scale happens to be necessary; in either case it is wrong to assume that sparkle and life cannot be obtained by a short scale of gradation. It is simply an understudy of the principles of compo-

sition which will give the life which is introduced in a picture that immediately appeals to the artistic spirit. Such a result is achieved by a proper placing of the tones so as to form an agreeable composition of mass.

A picture is a welding of tones into a pleasing whole, which would not include in the same picture a white as bald as paper can make it and a deep black. With such a variety the scale is bound to break down somewhere and be an eyesore to an observing person. If our aim is to produce a picture of a misty morning in the woods we shall require a few tones and light; if our aim is to produce an effect of sunshine we might very well use the same tones, *but* we should compose them in a more telling and forceful manner by having our darkest and lightest tones close together and probably a considerable superiority of one or the other. What I want to emphasize is that we need no more tones, and certainly not lower-scale tones, to secure a picture of sunshine or of mist.

We can similarly confine our tones within well-defined limits between the white and the black ends, and often a scale including no white nor anything approaching black will be found very suitable for a pictorial rendering.

Breadth of effect is only another phase of limited scale design, the predominating patches of light and dark being so placed as to immediately convey the message; the rest of the tonal scale is simply the welding into one harmonious whole. Very often it is only a case of small disturbing lights or details which hamper the full realization by presenting a jarring note, a tone or two which is too dark, disturbing the beauty of atmospheric suggestion; a tone or two which is too light, spoiling the effectiveness of our highlight.

Design of line and mass, which is only in exceptional cases presented by photography without amendment, complete and artistically, can only be learned by the control of the purely photographic, when it will soon be discovered that there are few things complete pictorially without some means of control other than that possessed by everyone over exposure and development, and, above all, this control should be in the direction of simplification and reduction of tones to come within a previously fixed standard; subdue the elaboration of photography and you will be nearer the artist's ideal.



MATINS.

O. C. CONKLING.

COLOR AND PHOTOGRAPHY

By C. E. KENNETH MEES, D.Sc., F.C.S.



HE sensation of sight is produced by light falling upon the eye. Ordinary light is produced by the incandescence of a very hot solid, which may be the mass of the sun, or carbon in an electric arc or filament lamp, or a mantle heated in a gas or oil flame. When ordinary light is analyzed by means of the instrument known as the spectroscope, it is found to consist of a mixture of different kinds of light which, falling upon the eye, produces various sensations which we term sensations of *color*.

When light falls upon an object and is reflected by it so that it enters the eye, the eye forms an image of the object upon the retina, and we *see* the object.

If the object does not equally reflect all the different kinds of light of which the white light is composed, the reflected light falling upon the eye will be more or less wanting in some constituents and will produce a sensation of color.

So that a colored object is one which does not equally reflect all the constituents of white light but which "absorbs" some.

The light which is absorbed is usually converted into heat and goes to warming the colored object.

If we analyze in a spectroscope the light reflected by a colored object, or transmitted by a colored "screen," we shall find that the continuous spectrum which is obtained with white light is replaced by one from which a portion is partly or completely missing. This missing portion appears as a black band, which is generally known as the "absorption band" of the color.

If a particular object absorbs most of the constituents from white light so that only a small portion of the spectrum is reflected, that portion may be referred to as the "reflection or transmission band."

Since the light which is not absorbed falls upon the eye the sensation of color produced is the reverse or "complementary"

to the color which is absorbed. When white light is examined in a spectroscope the analysis shows a band of colors which appears to consist of three main portions, red, green, and blue-violet, the red passing into green through gradations of orange and yellow, and the green passing into violet through gradations of blue-green and blue.

If objects of various colors are examined, it will be found that a light blue object has an absorption band in the red, a purple object in the yellow, a magenta in the green, an orange in the blue-green, and a yellow in the blue-violet.

Thus a sensation of "light blue" is produced by a mixture of green light and blue-violet light falling upon the eye, the red light being more or less absent, having been absorbed from the white light by the object, which appears to be colored light-blue.

In the same way a sensation of "yellow" is produced by a mixture of green light and red light falling upon the eye, the blue-violet light having been absorbed.

If the blue-violet light is not formed in the light source the original light will appear yellow, gaslight, for instance.

Much of the contrast which is seen in natural objects is due to color, and can be modified or eliminated by altering the color of the incident light or of the reflected light which enters the eye. Take, for instance, a red book having a gilt title. The red absorbs the visually dark blue-violet, and it also absorbs the green, which is reflected by the yellow-gilt title. The result is that the gilt title appears strongly contrasted with the red background of the book. If the book is examined through a blue screen, transmitting light which is completely absorbed by both the green and the red, then the red book and the yellow title will both appear dark, and though if there is much white light reflected by the title there may be a slight degree of contrast still, yet the degree of contrast will be much less than if the screen had not been interposed. If the book is examined through a green screen, which will absorb the red light reflected from the red book, while transmitting in full intensity the green light reflected from the yellow lettering, the contrast will be greatly increased. If, instead of the green screen, a red screen be used, the contrast between the yellow and the red will again vanish, and the whole will appear bright.

It will be seen, therefore, that in order to photograph contrast between two colors we must use a light for viewing which is absorbed by one of the colors, and not by the other. Or, if we are considering only a colored object against a white background, *we shall get the maximum contrast by viewing in a light which is absorbed by the colored object, and we shall get the least contrast by examining in a light which is reflected by the colored object.*

If you examine the brightness of a spectrum of white light, presenting successively the various portions to the eye, you will find that the deep red has little luminosity, but that its brightness increases rapidly as you turn toward the more orange portions, and finally in the narrow band of light which may be termed yellow you get a maximum of brightness. This is succeeded by the very bright yellow-green and pure green, and then the intensity grows less as you turn toward the blue-green and blue; while quite a considerable expanse of visible violet is very dark indeed, becoming darker until it fades away altogether.

If, after examining this spectrum, you place in its path a photographic plate, you will find that the photographic plate will not see at all those visually bright regions of the green and red, and that the maximum intensity for the plate is in the middle of the visually dark violet, stretching in enfeebled effect just into the blue-green on the one side, but far below the visual limit on the other. Indeed, nearly half the effect of light in an ordinary photograph is produced by the ultra-violet light which is invisible to the eye.

It may be as well to point out here that this order of luminosity for the spectrum colors does not hold for colored objects. If you try to make an imitation spectrum, copying spectrum colors by means of bright paints or dyed fabrics, you will find that, instead of the yellow-green being the brightest color after yellow, much the brightest colors are the reds.

The reason for this is that while a red color reflects nearly all the red light which falls upon it, a green color only reflects a small portion of the green light which falls upon it, while a blue reflects an even less proportion of the incident blue light. It is this great luminosity of reds which has caused the introduction of truly red-sensitive plates to be of such great importance.

It must always be remembered that yellow objects reflect both red and green light. There are no objects in nature which only reflect spectrum yellow, or which even chiefly reflect spectrum yellow, and it is very difficult to make a filter to do so. If such a filter is made it is extremely dark. But yellow objects are very bright because not only do they reflect as much red as a red object, but they reflect far more green than a green object.

I hope that this brief summary of the effect of color in photography may show the readers of THE AMERICAN ANNUAL OF PHOTOGRAPHY that the subject is by no means one which can be dismissed by any brief formula. The photography of colored objects involves careful consideration of the nature of color and of the relation between that color and the plate and screen, so that every subject must be approached with an open mind and a determination to get the best result that can be obtained after careful consideration of that particular case.

In my book, "The Photography of Colored Objects," which can be obtained from the publishers of this Annual, I have discussed at much greater length the theory underlying the photography of color, and have dealt with the application of those general principles in several special branches of work including technical photography, portraiture, and landscape photography.



THE RACE.

WALTER BURKE.



A NOVEMBER MORNING,
EDINBURGH.

A. W. WALBURN.



PORTRAIT OF MY COUSIN.

Harold Cazneaux.



MERCURIC IODIDE INTENSIFIER

By HENRY F. RAESS.



AMONG the many methods introduced for intensification since the advent of the gelatine dry plate none has been so popular as the mercuric chloride, with some "blackening" agent. It required two solutions, and it was practically impossible to control the amount of strengthening. Many attempts were made to use only one solution, but somehow they were not satisfactory. The Lumière mercuric iodide solution is probably the best single solution intensifier we have at present. This intensifier is made by dissolving mercuric iodide in a strong solution of sodium sulphite. But dry mercuric iodide is not very soluble in sodium sulphite, and a solution so prepared does not contain much mercury.

Attempts were made by the author to prepare a more concentrated solution, which could be used as a stock solution and diluted as required. Freshly precipitated mercuric iodide is much more soluble in sodium sulphite than when old and dry; apparently some molecular change takes place. For one thing, it becomes crystalline. A number of concentrated solutions of mercuric iodide were made from freshly precipitated mercuric iodide, alkaline, neutral and acid. It was found that mercuric iodide was only soluble in alkaline sulphite. Then another difficulty was encountered: the sodium sulphite gradually reduced a portion of the mercuric iodide to mercurous iodide, which resulted in a precipitation of the latter. Variations in the method of preparing the solution were made, but the reducing action of the sulphite could not be prevented. A few hours' standing is sufficient to precipitate a large portion of mercurous iodide. This precipitation ceases after a while and the solution can be used for intensifying, but the precipitated mercurous iodide represents a loss. When the mercuric iodide solution is made from dry iodide precipitation does not take place for some time, but the solution is weaker. Attempts

were then made to prepare a mercuric iodide solution without sulphite. It is a well-known fact that mercuric iodide is soluble in potassium iodide, and a solution of this kind was made. After standing for several weeks no precipitation took place and no apparent change was noticed. Comparative tests were made with the latter and other intensifiers containing sulphite, and it was found that the solution without sulphite gave much better results. It worked quicker, as the solution was more concentrated, and the image was stronger and possessed more contrast. On washing the plate it became orange in color, which seemed to increase the contrast in printing. If this orange color is objectionable, the plate can be blackened by putting it in a developer for a few minutes and then washing. This intensifier can be used many times: 10.0 gms. ($2\frac{1}{2}$ drams) of mercuric chloride is dissolved in 200 c.c. (7 ozs.) of water and 27.0 gms. (7 drams) of potassium iodide is dissolved in 100 c.c. ($3\frac{1}{2}$ ozs.) of water. When the two salts are in solution they should be mixed by pouring them quickly and simultaneously into a large vessel. The mixture should be quite clear. The above quantity of potassium iodide is usually sufficient to dissolve the mercuric iodide formed, and if not, a small quantity of potassium iodide should be added. This solution may be diluted with one or two volumes of water. As mercuric chloride is only soluble to the extent of about 6 per cent at 15 deg. C. (60 deg. Fahr.), it will probably take several days to dissolve a given quantity in water unless heat can be applied. It is not advisable to add anything to the solution to increase the solubility of the mercuric chloride.



THE FIELD LABORER.

THE. G. SORENSEN.



A KID.

F. C. BAKER.

LANTERN SLIDE MAKING

By ARTHUR E. MAYER.



MOST amateur photographers realize that it is not a difficult matter to make a lantern slide if they happen to have a kodak or camera $3\frac{1}{4} \times 4\frac{1}{4}$, or in fact any size by which they can make the standard size slide ($3\frac{1}{4} \times 4$), by contact. The same amateur, however, will think it a most difficult task to make slides from larger negatives, such as 4×5 or 5×7 , and involves either the purchase of lenses, condensers, etc., with an elaborate apparatus or an expensive lantern slide camera. Although I will admit it is easier to print by contact, the reducing method is very easy, and with a little ingenuity and the materials that can be obtained at little or no expense by the novice, a simple apparatus can be made to do very good work.

The first thing to consider is the place for the work, and for this any darkened room will answer, but it is most convenient after dark. At this point I will give a rough outline of the method so that the function of each part, afterward explained in detail, will be better understood. The principle is to place a camera on a table, put the lantern plate in the camera and photograph a negative held in front of it by means of a frame, having a light behind to illuminate it.

The first requirement is a stout table, at least 5 feet long, that will not vibrate during exposure. On this table draw a straight pencil line running the length of the table and about through its center, serving as a medial line. Next procure a box without a lid (about a foot and a half or two feet square and a few inches deep). Cut a hole through it about one-quarter inch smaller each way than the size of the negative, and on the outside arrange some little strips of wood to hold the negative in position. The object of having a box instead of a plain board is that the sides prevent any direct rays of light coming from behind the box and shining directly on the negative. The box is held in position by two small brads driven



SUNLIGHT, HEXHAM, ENGLAND.

JOHN BEEBY.

through the sides of the box into the table, and so the center of the negative is over the medial line of the table and 1 foot from the end.

Obtain from the glass cutters or make two pieces of ground glass, one about $6\frac{1}{2} \times 8\frac{1}{2}$ inches and the other 12×14 inches. These pieces of glass can be easily ground by laying the large piece on a flat table and sprinkling a little emery powder and enough water to make a thin paste. Grind the smaller piece on the larger for about a half an hour and wash off the paste. If there are no clear places the glass is ready for use. To make a stand for these, take two blocks of wood and saw a slit large enough to admit the pieces of glass and sink them in about a quarter of an inch. Place the small piece of glass about two inches from the negative and the larger one about ten inches from the negative. This will serve to diffuse the light evenly over the negative so that no condensers will be needed. The next thing to consider is the light, and for this nothing is more convenient than an ordinary gas drop-light with two Welsbach burners and mantles with an opal globe, which also helps greatly to distribute the light. This outfit is placed on a chair at the end of the table and at such a height that the center of the light is level with the center of the negative.

Place any long-focus camera on the line of the table, and a mark in the center of the front board and back will help to keep the camera on the line. In the center of the ground glass of the camera mark a rectangle $3\frac{1}{4}$ in. \times 4 in. with pencil, and this will serve to show the size of the slide while focusing. After the image is the right size and sharp, stop down the lens to about F.16, put a lantern plate in the reducing kit of the plate-holder, and then make the exposure as usual; the correct one will soon be found after a few tests.

Most photographers advise the use of a metol-hydrochinone, or hydrochinone alone, but my experience with them is that they make black and white slides without much gradation, which is not very desirable in a lantern slide.

The following is a formula which I have used for a considerable number of slides with fine success, and I find that it gives fine gradation of tones and detail that cannot be obtained with either of the other developers just mentioned:

A.—Water, 10 oz.; metol, 60 grs.; sulph. soda (cryst.), 1 oz.; pyro, 60 grs.

B.—Water, 10 oz.; carb. potash, 1 oz.

To Develop.—Of A, take 2 oz.; of B, take 1 oz.; of water, take 5 oz.

The lantern slides should be then fixed in an acid-alum fixing bath; then washed, dried and mounted.

The whole process of making lantern slides will be found to be very simple and one that any amateur can perform without difficulty, at the same time giving him the joy of seeing his own work on the white screen.




PORTRAIT.

O. C. CONKLING.

MATS AND FRAMES FOR PHOTOGRAPHS

By J. ARTHUR H. HATT.

HEN selecting a frame and mat for a photograph we are naturally far more limited in our choice of suitable materials than would be the case if we had to deal with a picture in colors, a water-color painting for instance. The many colors in a painting lend themselves to a much wider range of harmony than is the case with a monotone or photograph. As fully explained in my book "The Colorist" (D. Van Nostrand & Co., N. Y.), it is only in a harmonious arrangement of colors that we find the true elements of beauty. Contrasting colors, on the other hand, when used together in a color scheme can scarcely be called beautiful. The acceptance of this theory will of course lead to the choice of mats and frames which nearly resemble the photograph in color.

Accordingly, we would use a brown mat and frame for a brown picture; a picture in black tones would have a gray mat and a gray or black frame, and the various colors of the carbon process, as well as prints by other processes which receive various colors through toning, would also be treated accordingly.

There are some cases, however, in which it is desirable to vary this rule and still have a harmonious result. In order to do this successfully it will be well to analyze the color of the print to some extent to determine what may be the best colors to harmonize with it. For instance, we will say that a print is of a yellowish brown color, a color which could be matched by a mixture of yellow and black with a very little red. In this case we can color a mat with a mixture of yellow and black in almost any proportion, and this mat should harmonize very well with the print in question. (If there should be a tendency to produce too greenish a shade with a yellow and black, this tendency may be overcome by adding a very little red to the mixture.)



REPAIRS WHILE YOU WAIT.

W. S. RICE.

A red brown is made up of red and black, and we can color a mat to harmonize with such a color satisfactorily with a combination of red and gray. A dark green may be matched with a mixture of blue, yellow and black; to prepare a mat for such a color we can substitute gray for the black and form a new shade of green, which should harmonize with the green made up with the black instead of the gray. The best results will probably be found by making the mats a trifle more gray than the print.

It is rather difficult to find mats and frames of just the right color at the dealers, and for those who may be very particular I would suggest that they color their own mats and frames. Almost any paper that is not too heavily sized may be colored with water colors easily, if it is first soaked in water and stretched on a drawing board by being pasted at the margins. When dry it may be given a wash or two of a suitable shade of water color. It will probably be found easier to coat the paper evenly if there is a portion of Chinese white mixed with the color.

As to the frames, frequently they may be painted a solid color with oil colors with good effect. The best plan, however, is to have the dealer supply a frame in the natural wood, without any stain or finish whatever. Such frames may be stained the proper color with one of the numerous wood stains commonly sold by paint stores, and then finished in oil or varnish as preferred.

Having in a general way decided on the proper colors to use, the next question will probably be as to whether the frame and mat should be darker or lighter than the picture or photograph. In order to arrive at a proper understanding of this matter it will be well to consider what effect a dark and light color of the same hue have on each other. When it is remembered that the effect of one color on another is to make the color influenced appear unlike the influencing color, we realize easily that a black color will make a white color look much whiter when the two are juxtaposed; on the other hand, the white color will also have the property of making the black look blacker under the same conditions. This same result will be noticed, but in a lesser degree, when we juxtapose two different shades of gray, or brown, or, in fact, any other color.



THE LETTER.

KATE SMITH.

This peculiarity of colors may be used to change the aspect of pictures to some extent. Suppose that we have a picture that is a trifle flat, and that it is desirable to have the print look more brilliant, we may secure this result by using a rather light colored mat. The light color of the mat has no effect on the light parts of the picture, but has a tendency to augment the brilliancy of the dark parts. A photograph which is too dark, especially in the lighter portions, will look best in a mat and frame which are very dark, the dark of the mat and frame having practically no influence on the dark parts of the photograph, while they will have the tendency of making the lighter parts brighter.

From the above reasoning it will be apparent that a picture which has just the right amount of brilliancy, or, we will say, is normal, should have a mat which is neutral in depth of color or tone, one which can have the least amount of influence on the picture itself, while a photograph which is altogether too brilliant may be subdued to some extent with a white mat and a black frame.

The question of colors may be treated in much the same way, the influence of one color over another being also of a complementary nature—that is, when two colors are placed side by side each has a tendency to tint the other with its own complementary color. Thus red when placed beside another color will make that color look more blue; blue will make another color seem more red; green will give another color a pinkish appearance; pink or magenta will give a greenish hue to another color; yellow has the property of producing violet in other colors; violet, on the contrary, will make other colors seem more yellow.

This property of colors where one throws its own complementary color over another may be taken advantage of to modify the color of a print slightly when such modification is desirable by the use of a mat which is colored just the complementary of the desired change or modification. For example, we may have a carbon print in yellowish brown which would be more pleasing if it had a tinge of gray; we can accomplish this result by using a mat in which the yellow predominates to a greater extent than in the yellow brown of the picture. The greater amount of yellow in the mat will call up a violet color

in the eye which, added to the color of the yellowish brown picture, will give the picture a comparatively gray appearance.

On the other hand, if the print is too gray in tone it may be slightly influenced in other directions by the use of a mat which has a complementary color to that of the desired change; thus, suppose that we have a picture of a grayish red brown and it is desired to have it more yellowish, this could be accomplished, of course, to the greatest degree by the use of a bright violet colored mat; a bright violet mat, however, would be quite out of harmony and therefore impossible. Being confined to a mat which will harmonize with the picture, possibly a brown mat, we can choose one which is comparatively more violet in hue than the picture and accomplish the desired result of making the picture itself look more yellow.



SUNLIGHT AND SHADOW.

HAROLD CAZNEAUX.

SCREEN PLATE COLOR PHOTOGRAPHY

By HUGH C. KNOWLES.

WHEN Mr. Child Bayley published in "Photography" of July, 1907, the first intimation received in England that photography in natural colors, even though only on glass, was at last possible, I, having fortunately a friend in France, almost at once obtained a supply of Autochrome plates, and started working and experimenting, and my experiences with this and the other single exposure color plates—all of which, with the exception of the Warner Powrie plate, which is unobtainable here, if, indeed, it has yet arrived at the commercial stage—may prove of use or interest to those who may be using or intending to use some form of single exposure color plate.

I may as well state my conclusions first, that for ease of working, certainty of result and truth of color I have found nothing to touch the Autochrome plate.

At first I certainly had all troubles so graphically described by others as errors of exposure and development, not to mention the disappointment of seeing a well exposed and developed film suddenly slide off the glass and disappear down the sink.

But the plates of this year are so uniform that one's troubles are nil. The small black specks so disfiguring to a picture occur no longer, and with moderate care one has no trouble from frilling. The greatest improvement, however, is the possibility of inspecting a plate during development by the "Virida" safe light.

In practice I find this enables one to make a picture, at any rate passable, on a plate which, by the old system of a fixed development time of $2\frac{1}{2}$ minutes, would have been hopelessly over-exposed. As an example, I may say I exposed 4 plates in the same steady studio light on the same subject for 4, 6, 10 and 14 minutes, respectively, and by varying the times of development *only* obtained results absolutely indistinguishable from one another.

The new "Quinomet" developer is also very much cleaner than the old pyro-ammonia, though last year I obtained very good results by developing in 1—12 Rodinal, reversal as usual, and redeveloping in 1—6 Rodinal, and finishing the plate at that stage, getting a good density and brilliance by a careful calculation of the exposure.

One other advantage of the simplified treatment is that, intensification being omitted, one does not see nearly so many examples of colors intensified to a false brilliance and to false shades as a consequence of attempting to correct overexposure or overdevelopment by over-intensification, and one is spared that even worse abomination, the underexposed, overdeveloped, and over-intensified plate, the colors of which were never seen on earth or sky.

Speaking of exposure, I must confess to somewhat heterodox practice, as I always use a well-known exposure calculator (not a meter), and find that it never fails me when one adds and subtracts from the figure it gives the amount one feels is right, judging from the experience which can alone be gained by handling many plates. With the "Omnicolore" plate of Messrs. Joula one finds the same simplicity of exposure, and the process of development is no more complicated, though the plate has to be fixed, and the reversal is effected by a bichromate solution.

This plate is quicker in proportion, as the screen used with it is far less dense than the Autochrome screen.

I have obtained very fair color reproductions with this plate, but do not seem to be able to get such clear-cut shades or such translucency as with the Autochromes, and I must confess that I infinitely prefer the irregularly mixed starch grains of Messrs. Lumière to the regular pattern cross-lines of the "Omnicolore." This brings me to the "Thames" plate, recently put on the English market.

This is in two forms, one in which the panchromatic emulsion is coated on the same glass as the colored lines (called by the maker the "combined" plate), the other (called the "separate" method) in which the colored screen is on one glass, the emulsion on another, which necessitates their being brought into register after development. This last has one obvious advantage, i. e., that by not reversing the developed plate but

keeping it as a negative one can print therefrom any number of positives, or any good lantern plate, and by registering these with color screens obtain an infinite number of colored pictures. The truth of the colors is ensured by the fact that the structure of the screen plate is regular, so that another screen plate than that through which the negative was taken will give the true colors to the positive.

These plates also are faster than Autochromes, but in practice I have not found them capable of really good snapshots; the "separate" system, i. e., of two glasses, being the faster of the two.

Interesting though the "Thames" plates are, I must admit I have the same fault to find as with the "Omnicolore," that they have not the translucency and critical accuracy of the Autochrome, and that the linear form of the colored screen seems to produce a distinctly "liney" effect, and at the same time to fail to reproduce minute details, or faint shades to anything like the same degree; and in my opinion when Messrs. Lumière have given us a means of reproducing our Autochromes on paper, and have reduced the price of the plates even more, we shall have very little more to wish for, save greater rapidity, if it is possible. I feel rather ungrateful in even wishing for these alterations, so much pleasure have I had in making Autochrome transparencies of all kinds of subjects, from lions to ladies, and from ladies to lilies; but I suppose the more one has the more one wants. At the first thought it would seem as though Autochrome transparencies taken in a stereoscopic camera and viewed in a stereoscope should be absolute perfection, as giving not only the relief but also the colors of Nature. But this does not work out in practice, as the magnifying effect of the stereoscopic lenses also magnifies the starch grains, and, moreover, seems to lift the picture away from the colored screen, so that one seems to be looking at the picture through a veil of colored grains, which is far from pleasant; and, in addition, one has to face the difficulty of cutting the glass screen and emulsion neatly so as to reverse them in the stereoscope and to avoid a pseudoscopic effect.

In conclusion, I append a rough timetable which I use in my work which may be useful to those taking up the process, and by which several of my friends have taken a short cut to

successful work, until they have worked out one which suits their own idiosyncrasies better.

EXPOSE BY EXPOSURE TABLE.

Develop 30" in complete darkness, then inspect by "Virida" light and continue development until details can just be seen in the shadows, and the plate looks like a half developed monochrome negative.

Switch out light and wash 30" in darkness.

Pour on reversing solution and keep in darkness 5" or 10"; then bring into white light, and keep in the solution *not more* than 3" with continued gentle rocking.

Wash about 20" or till the washing water shows no tinge of pink. Redevelop in bright light *not less* than 2", rocking slightly and taking care that the edges of the dish do not obstruct the action of the light on any side of the plate.

Wash 5" and dry as quickly as possible.



MISS MAUD ALLAN.

E. O. HOPPÉ, F.R.P.S.

A PLEA FOR HONESTY

By J. WILL PALMER.



Are we trying to make "Pictures," are we not? Are we trying to make something as good as we can, as good as it is possible to make, or are we attempting to make something about as good as someone else has made, and which appealed to us as something fine?

Let me admonish you at the start never to attempt to copy another's ideas, especially if the particular idea appeals to you as a good one and well carried out, for in nine cases out of ten if you attempt to do this you will meet with failure. Why? Simply because the maker who is behind that picture has put some thought into it, and undoubtedly knows more nearly what is required to make a successful picture of it than you *can* know without considerable study and labor; and it is much more befitting that you select a new and original subject, and put some of your own individuality into it.

We often hear someone say, "This is a hackneyed subject"; "This subject has been overdone," etc. I wish to tell you there is no subject yet that has been overdone. Take, for instance, the "Mother and Child." Probably this theme has been attempted more times, by different artists, than perhaps any other subject known; and yet who will say there is not plenty of room to make an original *picture* of this subject which will appeal to countless thousands?

But I am digressing. What I started out to say was, "Be honest!" be honest in the little details which are essential to the makeup of a picture. Do not put wooden shoes and a pair of blue overalls on a "Coon" and try to pass him off for a "Dutch Peasant." Don't place a city dressed, city bred youth on a milking stool on the "nigh" side of a cow and attempt to portray "Milking Time." The cow might know better, if you do not.



STUDY OF A CHILD ASLEEP.

EDITH L. WILLIS.

There is no objection to using the city chap for the model if you know exactly how he should be posed; but ten to one you do not. And he must be clothed in raiment suited to his job, or in such habiliments as we are accustomed to see a person wear at such occupations, or it does not appeal to us as in harmony, in keeping. In other words, it is unreal, not "Honest."

For this reason it is of the utmost importance that we know our subject well. It is impossible to choose the proper moment to expose to give the true sense of action unless we are familiar with the movement, the action, necessary to perform the work we are attempting to portray. In fact, it is often the case that a perfectly natural motion—as proved in some snapshot exposures of entirely unconscious working models—does not carry the impression of action, hence it will be seen how necessary it is that we should know the proper moment to expose, and grasp it.

Why is it that a large percentage of our artists seem to think our common every-day life is not worth while to picture? Why are not our old clothes, our costumes, just as well worthy a picture maker's consideration as those of other countries? Possibly they are not as grotesque and outlandish as some, but we know them and how and when they should be worn, and will not be as liable to make fools of ourselves as we will if we attempt the costumes and customs of other countries of which we know nothing. Be honest.

There is scarcely an act, a motion, in the routine of our every-day life that is not worth picturing, and yet how often we hear the wail, "We have photographed everything around here; if we could only get away for a few days we would find something to make pictures." If they could only cross the ocean to some of those wonderfully picturesque lands where the other fellow makes pictures! And the other fellow is just as anxious to come over here. Be honest! acknowledge that the fault is yours; you have not learned to appreciate the things around you. Get busy and study the next man, or group of men you find busy; watch them carefully, and see if you cannot find pictorial possibilities that you have been passing by for years.



Copyright, 1906, by Davis & Dickmeyer, N. Y.
BY MY STUDIO WINDOW. **Charles H. Davis.**

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WILD BLACKBERRY BLOSSOM. MARGARET BODINE AND NINA LEWIS.



AS THE SUN SINKS
IN THE WEST.

E. G. DUNNING.

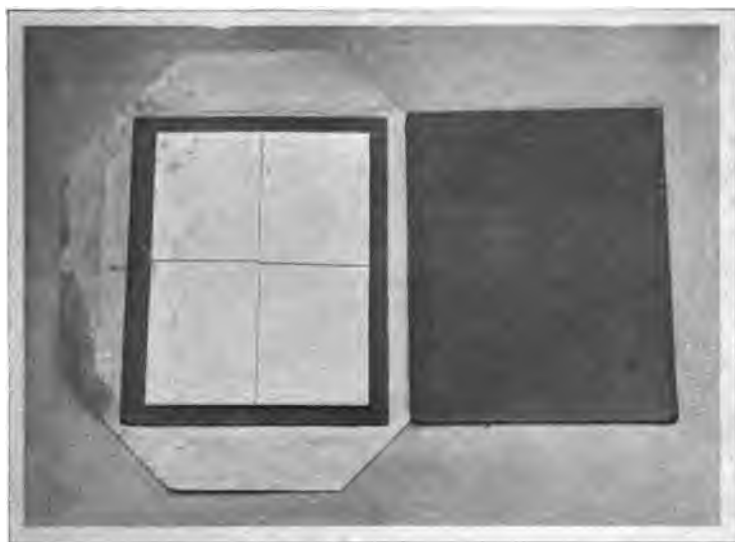
TRANSPORTATION OF PHOTOGRAPHS

By JERE MONTAGUE.

WHEN the Editor asked me to again contribute an article to the Annual, I really was at a loss to know upon what subject to write. I finally concluded that as the transportation of photographs had interested me of late, it might not be amiss if I related a little of my experience in that direction.

The two usual ways of sending photographs are by mail and express. The common container called a "Photo-Mailer" is absolutely useless as a safe means for transporting photographs by mail. I speak particularly of mounted prints. Many have been the nicely mounted pictures I have sent by photo-mailer to various parts of the country, only to have the editors write me: "Photo received in a mutilated condition." And alas! (I am almost ashamed to say it, as I'm an editor in a mild way myself) many are the mutilated photographs returned to me by various editors, which prints I *know* reached their destination in safety—many of these prints mounted on thin mounts have been returned to me contained in nothing but a thin paper en-

velope, protected by nothing. I make an earnest plea to photographic editors reading these words to *please* take the same care in returning prints that the sender has taken in mailing them. A photograph to be safely transported must first be wrapped in some kind of paper. It must then be enclosed between two pieces of corrugated cardboard, the corrugations of one piece running horizontally and the corrugations of the other piece running vertically. The cardboard should be at



Photograph Wrapped in Paper, about to be enclosed in Author's Photo-Mailer.

least one inch larger all around than the photograph. Place string around the cardboard both ways, securely enclosing the photograph; tie this string in a bowknot, so that the editor can easily untie it. Some sort of wrapping paper should now be placed about the bundle. Choose a light, but tough paper—the ordinary yellow manila paper is good—or you may use a colored tough fibre paper that many of the magazine editors use. Make your package appear neat, as there is nothing that delights an editor's heart as much as a nice, neat, clean, easily-got-into package of photographs. The package should be tied both ways with stout cord, and tied in a hard knot.

To facilitate the above process, I had a cardboard house make for me several hundred photo-mailers of various sizes, made of tough manila paper, and using the two corrugated boards spoken of above. All that is then necessary is to place the photograph between the two cardboards, fold in the ends, and then paste over the gummed flap. I generally use a strong, light, but tough brown "cover-paper" for a wrapper. You can



Photograph Wrapped, Ready for Transportation.

obtain this paper in cut sheets at any large paper store. A large white gummed label for the address is pasted near the centre of the package. A smaller gummed label on which the name and address of sender are printed is pasted in the upper left hand corner of the package, and to absolutely complete the process, a printed gummed "contents" label is pasted in the lower left hand corner, as seen in the accompanying illustration.

I am sure that if my readers will follow the above method of transporting photographs, the now familiar "dog-eared" mount will be relegated to the realms of the past.



CEDRIC.

HELEN W. COOKE.



STEPHAN SINDING.

RUDOLPH DUHRKOOP.

THE HANDS IN PORTRAITURE

By CHARLES STILLMAN TAYLOR.

THE position of the hands in portraiture has always been a perplexing problem in figure composition, and in the examination of a number of portraits by both professional and amateur workers we find this difficulty acknowledged, for in the majority of portraits the hands are either absent or hidden behind some convenient object; as a fan, book or bouquet. This disposition of the hands is often a serious injury to the portrait, and we have but to look over examples of portraiture in painting to discover that the hands are of great importance, expressing in no slight degree the character and personality of the individual. Owing to the great flexibility of his medium, the painter has an almost unlimited free-

dom in the arrangement of the hands, while the limitations of photography insist that these useful members must occupy the same focal plane as the face or body. This is a decided handi-



RUDOLPH DUHRKOOP.

cap, but as it is impossible to ignore the focus question the camerist must do the best he can with available material, and by the aid of artistic arrangement strive to overcome the shortcomings of photography.

It has long been the practice of portrait painters to err upon the side of idealism, and consequently the size of the hands is almost always shown smaller and more delicate than we



ERNST HEILEMANN.

RUDOLPH DUHRKOOP.

know to be their natural proportion. This attractive exaggeration is no doubt the cause of considerable dissatisfaction to the feminine sitter, who, having in mind the delicately tapered hand so often seen in paintings, very naturally expects the



A TRAGEDY IN STONE.

Gustav Eisen.

photographer to portray her own hands equally slim and beautiful. But the photographer is also found at fault, because of his unfamiliarity with the anatomy of the hand as well as its artistic arrangement, and this is very often apparent in his



RUDOLPH DUHRKOOP.

work in which the hands are, by reason of arrangement, or light and shade, thrown into undue prominence and falsely exaggerated in size and shape. The focal length of the lens has, likewise, a very marked influence upon the correct drawing

and truthful portrayal of the hands, and if a lens of short focal length be employed, this exaggeration of their apparent size is very forcibly shown. Still another important consideration in their appearance lies in the distance from sitter to lens, and a few practical experiments will convince the worker that their size and awkwardness increases as the distance from the sitter to camera is shortened. Before proceeding further it may, perhaps, help the reader to become acquainted with the actual size of the hand in proportion to the head and body, as recognized by artists, and with the idea of assisting the amateur as much as possible the following accepted measurements of the hand are given:

1. The length from the wrist to the tip of the middle finger is three-quarters of a head.
2. From the wrist to the division of the fingers is one-half of the hand.
3. The thumb is one-quarter of the head, or equal to one nose in length.
4. The natural position of the upper arm is at an outward angle, and that of the lower arm, inwards; and in a figure at perfect ease, the hands would approach each other in front.
5. The fingers also have an inclination inwards towards the middle of the hand; the second finger being straight.
6. In closing the hand the thumb, the first, third and fourth fingers converge toward the second finger.

In the disposition of the hands the photographer should rarely so arrange them that both attract an equal amount of attention, and care should be taken that they do not group themselves into any noticeable pattern, or follow too closely any regularity of design.

If this is found unavoidable, the least important member should be unhesitatingly thrown into half shadow. The apparent width of the hand may be largely controlled by the distribution of light and shade, and, that undesirable prominence may be avoided, the tonal scale of the hands should be registered in a lower key than that expressing the face. As each hand has four fingers and each finger is a repetition of another, it is advisable for the sake of variety to break up this unpleasant monotony, and for this reason the fingers should be separated that they may not repeat each other. If the hand



PORTRAIT OF A GIRL.

A. B. HARGETT.

is placed flat upon the table with the fingers extended, their position is an awkward one. When the hand lies flat with the fingers curled into the palm, an equally unpleasant effect is noticed, and if the hand be loosely clenched with the first or second fingers extended the same unpleasant form is apparent. But let the hand grasp a pen, hold a book, fan, spray of flowers, or assume other natural positions and the gracefulness of this member is at once perceived. We have only to give the hands an occupation to effect an agreeable arrangement, although it is, of course, necessary to provide them with an object which reflects the expression of and is in harmony with the subject.

With men the hands are more difficult to successfully dispose of, although it is true that the masculine mind seldom gives a thought to their size or shape. Put a man before the camera and he at once feels like a fish out of water, and unless some method is taken to occupy his mind and distract his attention from his conscious self he cannot be expected to appear at his best. Glance at the photograph of a man standing idly with hanging arms, then pick up a portrait of the same person reading a newspaper, holding a magazine, or perhaps lighting a pipe or cigar. The difference will be noted as a marked improvement.

In concluding these few remarks I will add that harmony demands a complete union or binding together of every portion of a portrait; head, eyes, hands, background and accessories, as well as a suitable distribution of light and shade to express the character, beauty, grace, or individuality of the subject. It is for this reason that the hands should not be separately employed, but given an interest which is shared in common with the subject, and if this is rightly executed the hands will be felt to play so important a role that the photographer will feel quite as justified in cutting off the head as to trim away the pictorial value which should find expression in the arrangement of the hands.



ALVIN LANGDON COBURN.

Rudolph Duhrkoop.

70



PASTORAL.

CLEO S. BOURGEOIS.

PICTURES IN SEQUENCE

By C. H. CLAUDY.

AVERAGE fiction is divisible into (1) Introduction, (2) Plot Development, (3) Action, and (4) Climax. Take any news story (story being used in the newspaper sense of anything written for publication, whether fiction or a report of a school-board meeting), and you will find this order reversed to some extent, the climax being first, the action second, the plot third, and the introduction cut out entirely. But the division is there, the segregation of the matters of interest into divisions and the separate presentation of each division.

Want to know what all this has to do with photography? In a minute! One of the most interesting departments of picturing with lens and plate comes in true record work—I do not mean the haphazard making of photographs of anything and everything usually dignified with that title, but the real

making and keeping of a photographic record of some thing, event, person, action, growth, etc.

Thus, a picture of a large, half-finished building is of little interest to any one save the maker of the photograph and the builders of the structure. But show that building from the first pick stroke in the ground to the first man to use the newly hung front door; include the corner stone, the dedication ceremonies, and a picture of the finished whole; get pictures of the different phases of the construction, record the obstacles, such as water in the foundation pit, the delay, the conquering of the difficulty, and you have a series which is a human document, far more interesting and surely far more worthy of praise for its making than mere sporadic attempts at seeing "how sharp I can make those guy ropes," or "what great depth my lens possesses."

A photograph of a railway engine, standing or in motion, has always a suggestion of romance and speed about it, albeit such suggestion may be more within the man who looks at the print than from the print to the man. But a series of pictures showing the locomotive in all stages of a day's work—in the roundhouse, over the cleaning pits, being oiled, coaled, watered, the engineer getting orders, the start through the yard, under full speed through the country, the passing by a village station, perhaps, even, from the cab window looking at the landscape and with some engine parts in the foreground—if you are lucky enough to have a pull with the management and can get on the engine for a run—will make a series simply stunning in interest and difficulty. Incidentally, such a set would be highly salable.

A series of a child—well, I have written so much and so often of successive baby pictures, of baby books, and baby records, that I had better skip this subject. But it isn't necessary to make a record from birth to manhood to make a baby series; and as between one picture showing the baby with his bottle, and ten showing him from eager hands outstretched to nurse to get it, through all stages of satisfied feeding to the finishing nap afterwards, there can hardly be a question of which has the most interest, human or photographic.

Never a photographer who has tried to make lens and plate define the word *genre* but will admit its difficulty. In this, the



FIRING UP.

W. T. KNOX.

series is a compromise, inasmuch as it is easier to tell a story with ten pictures, or five, for that matter, than with one. But let no one think that it is easy to follow a preconceived plan of a series to the letter and secure success, because it isn't! By the same token, the difficulty adds to the interest.

Now to get back to my opening paragraph. The same principles which govern the writing of a story—news or fiction—apply in the presentation of a series of pictures, whether they be record or for fictional purposes entirely. I have in mind as I write a series of the latter variety, showing Fido at the nefarious work of getting by stealth a bone from the pantry window. The series has been worked out rather artistically. The first picture, which is in lieu of the introduction, shows Fido disconsolately viewing a cat lapping some milk. It was this picture, with the hopeless expression of longing and hunger on the dog's face—which is irresistibly funny—which suggested the rest of the story. Picture number two shows Fido looking with interest towards a vine draped window, obviously a pantry window, since a pla'ter with something on it rests upon the sill: plot development. Picture three shows a leaping dog in the air half way to the window: action. Picture four follows a necessary hiatus, and illustrates Fido in intimate connection with a chop: climax. Picture five, a licking of chops and a calm disregard of a broken plate upon the ground; this with picture six, a muzzled and chained dog, completing the series, the moral. I have a somewhat similar set of my own, in which a small pussy examines a bottle of cream (introduction), tastes the edge of the bottle (plot development), knocks it over and walks over it (action), glances aside to see if any one is looking (more action), and finally laps up the spilled dainty (climax).

Of course, such *genre* sets are but one division of series work. The most interesting collection of successive pictures I had a hand in making is that collection of Wright aeroplane photographs which I took last year, showing the machine from its earliest unpacking, through all stages of erection—moving on a wagon via automobile, in the tent, on the field, details, on the catapult, in the air, and finally wrecked. Any single picture of a flying machine of any kind must have interest in this day of the infancy of that new art which is to work such wonders



A REFLECTION.

RUSSELL W. TAFT.

in our civilization; but a series showing any one incident in that revolution is not only of interest but of value. So much so this collection—which was made quite in the line of duty rather than of set purpose—that sixty of the best pictures, enlarged by courtesy of George Eastman to huge size and in the most superb manner, are to line the walls of the aeronautical room in the New National Museum as the beginning of the Alexander Graham Bell collection of historical aeronautical pictures.

And if you wonder why I have taken time to write of what may seem rather an obvious subject, let me say again—for I have said it many times before and probably will in the future—that between the truly artistic efforts of the real pictorialist—he who has studied art and really makes of the camera a tool to take the place of brush—and him who but snaps idly at this or that, as fancy dictates, is a broad and empty gap. The question “What becomes of the old cameras?” might be answered by inspecting this wide rift in the photographic terrace—the old cameras fill it, thrown there by those who tire of aimless pictures of this and that, who lack art training or artistic instinct, and who fail to grasp the possibilities of the camera as a maker of records in the true sense of the word. It is for these that I write, in the hope that the incentive of the chase, which persists to some extent in the least red-blooded of us all, may rise in some hearts and succeed in rescuing from obscurity some cameras too soon lost to use, or spur on to work of real value and real interest to them and others some of whose enthusiasm for the mono-eyed black box is dying down for lack of fuel to feed the flames.



OLD STREET IN
VITRÉ, BRITTANY.

MRS. ELEANOR W. WILLARD.

THE EXPOSURE AND DEVELOPMENT OF TELEPHOTO NEGATIVES

By EDGAR CLIFTON.

MOST of the writers on telephoto matters have devoted themselves to optical questions or the construction of suitable apparatus and little attention has been given to what we may call the purely photographic side, with the result that even with the best instruments the percentage of really good negatives is much smaller than it should be, owing to the operators not knowing the best method of working.

The initial difficulty is usually found in ascertaining the correct exposure. One is apt to give the same time for a telephoto subject as for a fairly near one, with the effect of getting a flat, thin, over-exposed negative, full of detail but printing only to a grey in the deepest shadows before the high lights begin to show a decided tint. If we bear in mind the very useful table which was published many years ago by Mr. Howard Farmer, we are not likely to be troubled in this way. For the benefit of those who have not a copy of this very useful guide it is here appended. The figures are of course only comparative and must not be taken as meaning seconds or fractions of seconds.

For an object of which the nearest important shadow is not more than

| | | |
|--|---|----------------|
| 10 feet away exposure | = | 1 |
| 10 to 30 feet exposure | = | $\frac{1}{2}$ |
| 30 to 100 feet exposure | = | $\frac{1}{4}$ |
| 100 feet to 100 yards exposure | = | $\frac{1}{8}$ |
| 100 yards to $\frac{1}{4}$ mile exposure | = | $\frac{1}{16}$ |
| Beyond $\frac{1}{4}$ mile exposure | = | $\frac{1}{30}$ |

In the foregoing table it is assumed that subject, light and lens aperture are unaltered, the enormous difference in exposure being due only to the variation in distance. Another important factor in the making of a good telephoto picture is

the lighting of the subject. This may usually be stronger than for near-by objects, and, therefore, exposures should be made at such a time of day that the shadows will be well defined and of sufficient area to give breadth to the composition. A fine example of lighting will be found in the magnificent telephotograph of Mont Blanc by Boissonnas, of Geneva, which forms the frontispiece of the late T. R. Dallmeyer's "Telephotography." In taking this picture the exposure was delayed until 6.15 on an August evening and the long oblique shadows give a wonderful impression of plasticity, despite the great distance, over 48 miles, at which it was taken. For most distant tele views evening will be found a very suitable time as the atmosphere is then usually clearer and the orange glow preceding sunset materially assists in a true rendering of the subject. There is also an absence of the shimmering effect, caused by currents of heated air, which if present renders the production of a sharp picture impossible.

There are several points on which the development of telephoto exposures differs from that of ordinary negatives, the principal one being the greatly increased time required. To secure "plucky" results from flatly lighted subjects it is necessary to give the minimum exposure and to develop until the whole of the silver bromide which has been acted upon by the light is reduced to the metallic state. This can readily be proved by a simple experiment which should be made by every novice in telephotography. Expose a plate on a distant subject, being careful not to over expose; before development cut into halves and proceed to develop in the usual way. The image will appear flat and dull looking, no clear shadows being apparant even from the start. When the usual time of development has elapsed remove one-half, fix and wash as usual, let the second half remain in the developer for an additional period of, say, three times as long as the first, then fix and compare. This one plate will teach more than a book full of precepts. The developing solution should not be too dilute and if pyro be used an ample allowance of sulphite is necessary, to avoid staining. Extra rapid plates are not good for telephotography, a fairly slow isochromatic plate giving density readily should be used, and in nearly all cases a light filter is a necessity. A long lens-hood is a valuable accessory, as it

prevents unnecessary light from striking on the inside of the lens tubes and camera bellows. By using a hood seven inches long upon a ten-inch Dallmeyer patent portrait lens fitted with a 1.6 negative attachment the writer has obtained good negatives at a distance of 6 miles on the level, the equivalent focal length of the combination being over 18 feet. Without the hood nothing but flat foggy pictures could be obtained.



RUDOLPH DUHREKOOP.



A FOGGY MORNING.

TH. G. SORENSSEN.

EXPERIMENTING

By J. C. HEGARTY.



THE literature of photography is rich in instruction for beginners, but there is a lack of information in our magazines and annuals for the amateur who has passed from the beginners' class and who desires to produce more than a mere record of fact photograph.

After the novice has become somewhat proficient in negative making, he should, if he desires to excel in the art science, adopt a method of work that will give him some knowledge of the effects of different exposures as well as the various results to be obtained by manipulating the camera or modifying the developing solution.

He should do his work in a systematic manner, the hit or miss method of the snapshot enthusiast having no place in the work of the amateur who desires to produce artistic photographs; with this in mind, he will observe some system in his experimenting, with the aim that each plate exposed and de-

veloped or batch of prints toned may teach him something, and add to his store of knowledge of the photographic art.

A scene should be selected and a number of plates exposed; if conditions are favorable all will be lighted the same; variations in the time of exposure and changes in focusing should be made. The plates should be developed carefully to note the effect of different exposures, and the developing solution may be modified to produce different results, all of which should be carefully observed and notes made for future reference.

I cannot give a better explanation of the idea I desire to convey than by relating an experience I had with a friend who requested me to give him some instructions in negative making. The day chosen was an ideal one, and the conditions were favorable, soft sunlight with white fleecy clouds in a sky of azure blue; the entire absence of wind permitted me to give time exposures without danger of the foliage of the trees being blurred.

After some time spent in exploring we selected a beautiful scene along a stream where it curved gracefully through the woods; on the left bank the trees were close to the water's edge and two large ones overhung the stream; on the opposite bank the trees stood a short distance from the stream, leaving a greensward near the water; in the distance a hill rose almost to the dignity of a mountain, giving the scene a background in keeping with the rest of the landscape. The sun was behind the camera to the right and lighted the scene evenly, the reflection from the water lighting up the deep shadows of the two trees.

For the first exposure I used a plain plate of medium rapidity, focusing carefully on the foreground and middle of the view, using as large a stop as I could without sacrificing the detail in the foreground, the idea being to get as much atmosphere as possible in the negative. I gave what I considered was a liberal exposure. Without changing the focus or stop, I made the second exposure, using an orthochromatic plate also of medium rapidity. As the prevailing color in the scene was green, I decided that a liberal exposure was necessary. The third exposure was on a plain plate, but I used a large stop and focused on the immediate foreground, the effect desired being a soft negative somewhat of the impressionistic order. I gave



EVENING IN AN OLD TOWN.

TH. G. SORENSEN.

less time to this plate than the first exposure received. With a desire to get clouds in the fourth negative I used a light yellow screen and focused similar to the first exposure, and increased the time of exposure four times, using an orthochromatic plate; again I tried for clouds with an ortho plate, using a home-made cloud shield placed on the lens; this shield cut off a portion of the light and required the use of a large stop—consequently I gave a medium exposure. For the sixth and last exposure I used a pinhole, extending the bellows of the camera until the plate was twenty inches from the pinhole and gave one and one-fourth minutes' exposure, using a rapid plate.

Another scene was selected and the same number of exposures made; then, as my supply of plates was exhausted, we returned to the dark room. The plates were carefully developed, using a pyro developer considerably diluted. I obtained six negatives of each scene, which when printed gave me six representations of the view. All were beautiful, but quite different in appearance. The first exposure gave what would be termed a brilliant negative; the second, on an ortho plate, showed better tonality and a more truthful sky, but did not have the atmosphere that the third exposure had, it being soft and without pronounced detail, yielding a beautiful soft print that was greatly admired. The exposure made with the screen gave me a fine negative, probably the best of all, with a good cloud effect and beautiful half-tones; the one with my improvised sky shield also gave a good cloud effect, and on account of a large stop being used the negative was soft and had considerable atmosphere; the pinhole negative gave a good print and showed some orthochromatic effect, due probably to the lengthy exposure.

To the inexperienced this may seem an unnecessary amount of trouble and an extravagant use of plates, but no better use can be made of a few dozen plates than by experimenting as suggested above. The careful worker will soon learn how to secure the kind of negative he desires and also learn the method that will give him the most pleasing picture of the scene. The store of knowledge gained will enable him to go at his work with confidence, fewer plates will be used, better negatives secured, and finer results obtained.



A CHILD'S ADORATION.

E. G. DUNNING.



FIGURES FROM THE CHURCH PAGEANT, LONDON, 1909.

WILLIAM GILL.



DR. JOHN GREEN.

J. Strauss.

24



SUNLIGHT.

ERNEST CLAYPOLE.

DEPTH OF FOCUS

By J. A. ANDERSON.

DEPTH of focus (preferably of definition) does not exist in the sense that objects at different distances from the lens can be in exact focus on the focusing screen (ground glass) at the same time. This is often made evident by the diffusion seen in parts of enlargements from negatives which appear to show equal definition all over. Such apparent equality is due to the fact that the eye cannot distinguish slight differences in definition.

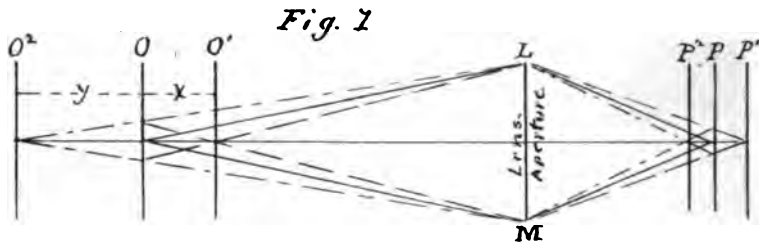
The subject of "depth" may be viewed in several aspects. The present discussion relates to that in which two points near the lens, and at different distances from it, give the same degree of imperfect definition on the focusing plane upon which an intermediate point is sharply defined, as in photo-

graphing at or near full size, botanical or other subjects having considerable depth of structure.

In Fig. 1 O is a point in an object from which a cone of rays of light (of which we deal only with the outer rays) pass through the lens aperture LM and are concentrated at a point in the focal plane p , which is at the proper position for the object at O to be in exact focus.

If the object is shifted to O_1 , its focal plane is at p_1 and the rays, passing the ground glass, will form on it a small circle or dot.

If shifted the other way, to O_2 , the rays come to a focus at p_2 and, crossing there, form a similar dot on p . If the two dots are identical they represent the same degree of imperfect definition and the distance from O_1 to O_2 is the "depth of field" for that degree of definition.



Every point in an object sends forth its cone of rays and, if each form such dot, the picture, instead of being sharply defined, is composed entirely of them, overlapping each other, and is confused (out of focus). From this fact such little circles have been termed "circles of confusion," which, for brevity, we will call c.c.

Experts agree that, at a distance of 12 inches, the eye does not distinguish the difference between the smallest visible point and a circle of the diameter of $1/100$ of an inch. Such circle has been accepted as the measure of the limit of allowable confusion, when all the picture is to *appear* sharp, though not absolutely so.

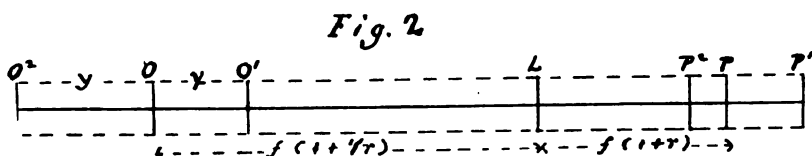
A larger c.c. gives apparent confusion, which is sometimes wanted, and a smaller gives finer definition, which is often an advantage in enlarging and in slide making.

In focusing, with a large aperture, upon a central point in an object such as has been named, it is seen that the extremes,

in the line of sight, are not well defined and that, to get good definition, the aperture must be reduced. This may have to be carried to such extent that the image cannot be seen distinctly. If one goes to the smallest aperture, so as to get the best the lens will do, this may still leave an uncertainty as to whether the desired definition is attained, and it may so prolong the exposure as to be fatal to the picture, as, for instance, in the case of rapid drying out of fresh specimens.

Those doing much of this class of work may acquire the facility of judging as to the proper aperture, but others will find it useful, as has the writer, to know something definite about it. It was to this end that the calculations have been made which are here described.

In Fig. 2 the points referred to in the previous figure are given, omitting the lines representing the rays of light.



Here, as before, the point O is understood to be in exact focus at p , and O_1 and O_2 are the extremes which have their foci at p_1 and p_2 , and are understood to be so placed as to give equal c.c. on p . The total depth, between O_1 and O_2 , is shown to be divided at O into two parts, x and y , of which y , the farthest from the lens, is always the greater. This division of the depth is important, as it will be seen later that these parts vary considerably in relative length where there is little variation in the total depths.

The relative size of the image to the object, termed the ratio, has an important effect upon the depth. This is here represented by a figure or fractional expression, arising from the division of any linear dimension of the image by a corresponding dimension of the object. Thus, if the two are of the same size, the ratio is 1; if the image is half size, the ratio is $\frac{1}{2}$, and so on. The ratio is taken for the point O in accurate focus.

As indicated in Fig. 2, the distance from the proper point in the lens to the focusing plane is equal to f , the focal dis-

tance of the lens, multiplied by 1 plus the ratio, and the distance for the object is equal to the focal distance multiplied by 1 plus 1 divided by the ratio. These are usually stated in the form shown in the figure.

We have thus four elements: the focus, the aperture, the c.c. and the ratio, on which to base the calculations.

Although the method used is quite simple, it is not intended here to go into the mathematics of the matter, excepting to give, later on, the resulting formulæ for those who wish to make calculations for themselves.

It is well known that in photographing a landscape or other distant object, the depth, as understood in that class of work, is greater with the shorter focus. When taking up the subject, inquiries by the writer of several of those having some knowledge of the matter, brought out the fact that they believed that the same held good with work at short distances. The calculations show that in fact *there is no practical difference in total depth on account of difference in focus, until the ratio becomes quite small.*

Owing to the great variety of conditions to be met, the writer has discovered no practicable way of showing graphically, by curve or otherwise, the comparative results obtained by the calculations, and must be content with selections from numerous tables constructed, to show the practical equality of the total depth for different foci, and the respective relations depending on the other elements in the calculations.

For this purpose it has seemed sufficient to take the foci of 5 and 20 inches, as extremes, with ratios .1 and $\frac{1}{2}$; c.c. of $\frac{1}{100}$ and $\frac{1}{200}$; and apertures $f/22$ to $f/64$. For any larger aperture the depth is inappreciable.

The apertures are designated by their denominators of the "f" system, omitting the decimals which belong to 22 and 45. The parts of the depth are designated, as in Fig. 2, by the letters x and y and the total by D . The figures are carried to three decimals, which is much farther than is needed in practice. They are so arranged as to facilitate comparison. The depths for the intermediate foci do not differ materially from those given.



PILLARS OF ST. MARK.

John M. Knapp.

70

**Depths of Definition, with Foci of 5 inches and 20 inches,
with Apertures from 22 to 64, Ratios 1 and 1/2 and Confusion
Circles 1/100 and 1/200.**

| RATIO 1. | | | | RATIO 1/2. | | |
|--------------------------------------|-------|-------|----|------------|-------|-------|
| x | y | D | F | x | y | D |
| APERTURE 22. CONFUSION CIRCLE 1/100. | | | | | | |
| .421 | .460 | .881 | 5 | 1.213 | 1.447 | 2.660 |
| .435 | .445 | .880 | 20 | 1.292 | 1.349 | 2.641 |
| APERTURE 22. CONFUSION CIRCLE 1/200. | | | | | | |
| .215 | .225 | .440 | 5 | .632 | .690 | 1.322 |
| .219 | .221 | .440 | 20 | .653 | .667 | 1.320 |
| APERTURE 32. CONFUSION CIRCLE 1/100. | | | | | | |
| .601 | .684 | 1.285 | 5 | 1.702 | 2.202 | 3.904 |
| .630 | .650 | 1.280 | 20 | 1.860 | 1.984 | 3.844 |
| APERTURE 32. CONFUSION CIRCLE 1/200. | | | | | | |
| .310 | .331 | .641 | 5 | .902 | 1.026 | 1.928 |
| .317 | .323 | .640 | 20 | .945 | .975 | 1.920 |
| APERTURE 45. CONFUSION CIRCLE 1/100. | | | | | | |
| .826 | .989 | 1.815 | 5 | 2.288 | 3.293 | 5.581 |
| .880 | .921 | 1.801 | 20 | 2.584 | 2.827 | 5.411 |
| APERTURE 45. CONFUSION CIRCLE 1/200. | | | | | | |
| .431 | .471 | .902 | 5 | 1.238 | 1.484 | 2.722 |
| .445 | .455 | .900 | 20 | 1.320 | 1.381 | 2.701 |
| APERTURE 64. CONFUSION CIRCLE 1/100. | | | | | | |
| 1.135 | 1.468 | 2.603 | 5 | 3.057 | 5.161 | 8.218 |
| 1.240 | 1.322 | 2.562 | 20 | 3.610 | 4.102 | 7.712 |
| APERTURE 64. CONFUSION CIRCLE 1/200. | | | | | | |
| .601 | .684 | 1.285 | 5 | 1.702 | 2.202 | 3.904 |
| .630 | .650 | 1.280 | 20 | 1.860 | 1.984 | 3.844 |

In this table we find,

First. No practical difference in total depth on account of focus until a considerable reduction in ratio is reached.

Second. Each reduction in aperture increases the total depth about one-half.

Third. While the total depth is practically the same for the two foci, y is the less for the longer focus and x is the greater.

Fourth. The total depth for ratio $\frac{1}{2}$ is about three times that for ratio 1.

Fifth. The depth for c.c. $\frac{1}{200}$ is about one-half that for $\frac{1}{100}$.

Sixth. With decrease in size of aperture y increases more rapidly than x .

An inspection of the table will reveal other interesting features.

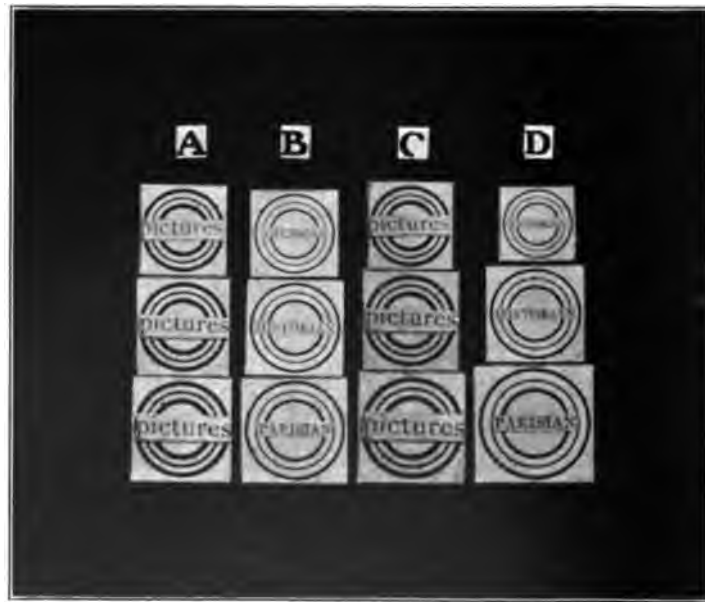


FIG. 3.

Some tests were made, by photographing small cards, containing suitable designs and set up at the distances from the lens calculated for apertures $f/22$ to $f/64$, for full size and

half size, and c.c. 1/100. The lowest card is the one nearest the lens, the central one being in focus.

For full size the cards were half an inch square, for half size an inch, so that all should be approximately the same size in the prints. Lenses of $8\frac{1}{4}$ and $5\frac{1}{2}$ foci were used.

The photographs showed the practical correctness of the figures. In one or two instances the definition was not quite as good as expected, which was probably owing to lack of mathematical accuracy in the size of the apertures or to other conditions found in actual practice. This would indicate that we cannot go to the last extreme in the use of the calculated figures.

From the tests are selected the following as being the most severe, all being with aperture $f/64$ and therefore having the greatest extremes in depth. The reproduction does not show the degree of definition accurately, but the comparative definition may be seen and the relative sizes appear, showing the perspective effect.

Following the prints is a table of the distances used in each case, the distance nearest the lens being indicated by x , the other by y and the total depth by D .

TESTS FOR CONFUSION CIRCLE $1/100$ WITH APERTURE $f/64$.

| | Focus $8\frac{1}{4}$ | | Focus $5\frac{1}{2}$ | |
|-----------|----------------------|---------------------|----------------------|---------------------|
| | Ratio 1 | Ratio $\frac{1}{2}$ | Ratio 1 | Ratio $\frac{1}{2}$ |
| | A | B | C | D |
| x | 1.19 | 3.32 | 1.15 | 3.12 |
| y | 1.39 | 4.54 | 1.44 | 5.00 |
| D | 2.58 | 7.86 | 2.59 | 8.12 |

The calculations and the tests are to be understood as being for lenses having all the modern corrections, and for the center of the plate. The question as to whether they would hold good for the edges of the plate was submitted to several experts, eliciting various responses.

One asserted very positively that there would be no variation. A maker of lenses of world-wide reputation said that there would be about three per cent. falling off in definition, a statement which does not indicate a vital difficulty in the use of the results, as, with the class of subjects in view, it will seldom occur that the extreme depth will be wanted at the edges or, if it should be, a little further stopping down will give relief.

The following are the formulæ by which the calculations were made:

$$x = f(1 + r) \frac{n}{fmr^2 + nr} \quad y = f(1 + r) \frac{x}{fmr^2 - nr}$$

$$D = f(1 + r) \frac{2fmn}{f^2m^2r^2 - n^2}$$

In these f represents the focal distance of the lens; n the denominator for the aperture; and m that for the c.c.; r the ratio; x the part of the depth nearest the lens; y the part farther away and D the sum of x and y . Formulæ given by others, for similar conditions, retain the fractional expressions for c.c. and aperture, which, for convenience, are here eliminated.

Putting these formulæ into figures, suppose $f = 20$; $n = 32$; $m = 100$, and $r = \frac{1}{2}$. Then

$$x = \frac{20(1 + \frac{1}{2}) \times 32}{(20 \times 100 \times \frac{1}{4}) + 16} = 1.860;$$

$$y = \frac{20(1 + \frac{1}{2}) \times 32}{20 \times 100 \times \frac{1}{4} - 16} = 1.984;$$

$$D = \frac{30 \times 2 \times 20 \times 100 \times 32}{400 \times 10000 \times .25 - 1024} = 3.844$$

As y is greater than x , the point in focus should not be back of the center of the visible part of the subject, and measurement from that point to the front of the subject gives x , from which the proper aperture may be determined. When such measurement can be made readily the denominator for the aperture is found by the following formula:

$$n = \frac{fmx}{f(1 + \frac{1}{r}) - x}$$

Taking x from the table for f , 20; r , $\frac{1}{2}$; m , 100; n , 32, and putting the formula into figures:

$$n = \frac{20 \times 100 \times .5 \times 1.86}{(20 \times 3) - 1.86} = 31.99 +$$

The result is not minutely exact because of the decimals not being carried further in the amount taken from the table.

Such measurement and reference to the amount nearest to it in the table give a close idea of the aperture needed, with-

out the calculation, but, in actual work it will be found convenient to have, in a notebook, a table for the lens in use, showing the x values for each set of conditions likely to arise.

In making the calculations it is well to prove them, by calculating both x and y and then D , the sum.

In focusing for size, dependence must be either on trial, and measurement on the ground glass, or upon the correct extension of the camera. When the latter is determined and the camera fixed at such extension, it is moved back and forth until the proper point is in focus.

If the ratio of the image to the object is determined on, the focus is multiplied by 1 plus the ratio, for the proper extension. If exactness is not required, this may be used as the measure from the ground glass to the diaphragm. A more exact way is to focus on the extreme distance and make a mark on the camera showing the extension. Then, if the focus of the lens is known, multiply it by the ratio, for the further extension, beyond the mark. If not sure of the focus, as given by the maker, focus on some near object, which is readily measured and photograph it, marking the additional extension, beyond the first mark. From the negative get the measure of the image and, then, its ratio to the object. This divided into the *additional* extension gives the focus, which, multiplied by any ratio, gives the *additional* extension for that ratio.

In closing it will not be out of place to give what has frequently been published, the means of ascertaining the distance from the lens, in landscape work, of the nearest point at which allowable confusion is found, when the distance is in focus. Calling the required distance O , the following is the usual formula, after eliminating fractional expressions:

$$O = \frac{f^2 m}{n}$$

If the foreground is to be sharp and the distance diffused, which is the more natural way, the formula is:

$$O = \frac{f^2 m + f n}{n}$$

The distance from the lens, in the latter case, is a little greater, but the character of the definition is more satisfactory.

CARBON PRINTING—A VISIBLE IMAGE

By WALTER W. LAKIN.



THE call of the Editor for an article, short and practical, must be obeyed.

Having been experimenting lately with carbon paper with the idea of getting a visible printing image, the progress I have made in that direction may be of interest to some readers of these pages.

I take first the transfer paper instead of the tissue, and sensitize it for three (3) minutes in the following: Bichromate of potash, 1 ounce; water (warm), 9 ounces, 1 dram; use when cold, hang paper in a darkroom or closet to dry, as it is very sensitive to light when dry.

Print in subdued daylight till the image shows a faint chocolate brown on a yellow ground.

Place the print, face up, in the following: Bichromate of potash, 1 dram; water, 10 ounces; sodium sulphite, 5 grains; strong ammonia, 1 dram.

Take a piece of tissue of the color desired, and immerse, face down, until it becomes limp. Now take hold of the edges of both papers and draw them over the edge of dish, face to face, place on a piece of glass and gently squeegee together. Place the two papers between blotting paper with a sheet of glass top and bottom, putting a weight on top to keep them flat and free from air. Put as many prints as you have in this pile and see that they keep moist at least ten (10) hours. After that time place a print in warm water 95 deg. to 100 deg. Fahr. till the color oozes out around the edges of the tissue; pull off the tissue and develop the picture in the usual way.

There is no need for a safe edge, and the picture image is not reversed, thus doing away with any need of double transfer and its difficulties.

Such have been my experiments, utilizing the well-known fact of the continuing action of light on bichromated gelatine. I trust that some one may continue along this line and let us know in a future volume such success as may attend them.



THE CATHEDRAL DOOR.

MRS. D. MAHONY.



DEW ON GRASSES.

WILSON A. BENTLEY.

PHOTOGRAPHING WATER WONDERS

By WILSON A. BENTLEY.

I HAVE pointed out in previous articles how many charming departments for photographic effort lie among the various forms of water, the snow, frost, ice, dew, and cloud.

The snow crystal crop of 1909 having been a partial failure, I will refer but briefly to it. It is interesting, as showing how long practice in selecting and photographing snow crystals aids in securing the choicer specimens; that the snow crystal photographs secured during the past unfavorable winter, though few in number, were of great interest and beauty. Perhaps the Editor may find room to reproduce one or two of these exquisite gems from cloudland for the 1910 Annual.

Having continued my photographic studies of the dew during the past summer and made some improvements over previous methods, possibly a few words relative to dew photography may be of interest. I touched briefly upon dew photography in the 1908 Annual, suggesting that a $\frac{1}{4}$ size lens



A PASSING GLANCE.

Harold Cazneaux.

20

and an extension camera and a black background for the object seemed to be best in this work.

It still seems necessary in a few cases, especially when photographing the dew upon the grass blades, dew-laden spiders' webs, and objects which cannot be moved without disturbing the arrangement of the dew upon them, to pursue the methods therein outlined, i. e., to photograph them in their natural environment, using a black background when possible. But I have found, if great care is used, that most dew-laden objects, even in some cases the spider's web, may be plucked or removed from their natural position and be re-arranged in front of an especially black background, so that much better results can be obtained than by photographing them *en situ*.

Perhaps the best background is made by painting the inside of a pail black. Objects arranged in front of such a pail, and so placed as to be thrown in relief against the black obscurity



DEW.

WILSON A. BENTLEY.

of the pail's interior, photograph beautifully. The pail may be placed in a horizontal position upon the ground, or raised, in the same position, somewhat above it, as the case may require, and so also with the extension camera.

It is best to construct a tiny vise in some way to hold the dew-laden object in place in front of the camera. Two thin strips of board, blackened, and nailed smooth side together at the middle will serve. The opposite end from the vise end should be sharpened, so that it can be stuck into the ground in a vertical or slanting position, as required, and turned at any angle, so as to bring the object fastened therein up or down, or at any angle desired.

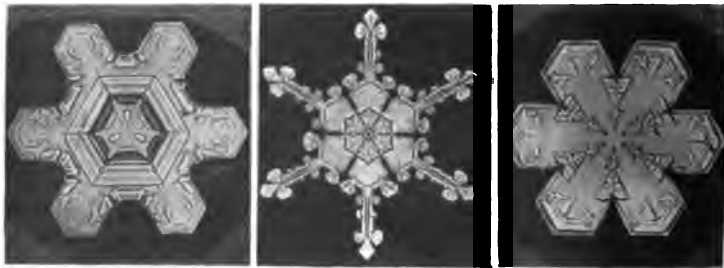
Scissors may be used to clip off the stems of the plant leaves, etc., to be photographed. Great care must be used

to handle them carefully, and in such a way as not to allow the hand or any object whatever to touch the surface of the dew-laden object.

In the case of garden spiders' geometrically shaped webs it is oftentimes possible to secure only sections of such for photographic purposes. But even sections make exquisite pictures. A wire bent into a circular loop and made "sticky" with Canada balsam will serve in many cases to accomplish the removal of the web from among the grasses or wherever they may be hung.

It need hardly be repeated that there is a rich and interesting field of endeavor for the amateur photographer in this line of work. Any given locality contains a vast number of different plants, grasses, etc., each of which collect the dew beautifully and differently. And, of course, the plants and grasses vary widely at widely separated localities, which insures that this line of photographic work will not soon be exhausted. The writer confesses that he has a keen wish to travel far afield, even into other lands and climes, for the purpose of observing and photographing the varied arrangements of the dew as it may occur upon the natural forms in these unknown fields.

Yet the writer is willing that others may forestall him in this charming work, and even hopes that this brief sketch may help to call renewed attention to the wonders and beauties of the dew, and help to bring this about.



SNOW CRYSTALS.

WILSON A. BENTLEY.




AN OLD DOORWAY.

GEO. E. BROWN.

PRINTS FROM WEAK NEGATIVES

By GEORGE F. HOLMAN.

ELL, of all the old, stale jokes I ever heard! Why, I heard half of those when I was a small boy!" said an elderly man in a plaid suit at a vaudeville show the other evening. "Yes, but he gets the hand and plenty of laugh, and that means a good salary. You see most of the people here are not as old as we are, and what they never heard before is just as good as if he had sat up all night making a new one," said his friend. All of which suggested this article.

Many a poor negative has been thrown away because the beginner makes one print and the result is so unsatisfactory that the negative goes to the ash barrel and a year after is wished back in vain.

One dull day recently the author of this article exposed some plates and obtained some negatives in varying degrees of flatness—some thin, some dense—and was on the point of throwing them away in disgust when he remembered having seen somewhere in the dim past that there were papers on the market that would make prints from that kind of negative. Not knowing what would produce the desired result, and "having friends in both places," papers of different makes warranted to give contrast were secured. Velox for contrast brought fine prints from some negatives, but failed to give good results in others, which were brought out well with Azo, Grade-D, Hard. Then came one that defied all efforts to get even a fairly good print; it was too flat to do anything with, and was about to go the way of the ash heap, when a friend suggested Blue Label Cyko, with the remark: "If that won't give you a print nothing will." The Cyko produced a print that was surprising. It was as snappy and strong a print as if the negative had been intensified with an intensifier that would actually do all that is claimed for it on the label.

It is impossible to give advice as to what paper to use to get best results from a negative without seeing it. But if a print is wanted from a certain negative and the first attempt is a failure, don't throw it away because you cannot get a print with your favorite grade of paper—there are others.



THE GOLDEN BUTTERFLY.

Kate Smith.

44



IN JUNE.

GEORGE F. HOLMAN.



CORNER OF LIBRARY.
UNIVERSITY CLUB,
NEW YORK.

(No. 1)

R. E. TEBBS.



NO. 2.

R. E. TEBBS.

FLASHLIGHT VS. DAYLIGHT

By ROBERT W. TEBBS.

AFTER two years' incessant work and study on interior photography I fail to see the reason why the majority of first-class photographers will insist on using flashlights, cleanly as the process is to-day, when daylight can be used to better advantage.

The one and only valid excuse must be the amount of exposure often required. A two-hour exposure is, I suppose, a long time for an impatient photographer to wait, but, nevertheless, that much time was given to plate No. 1. No flashlight could possibly have given the satisfaction that photograph gave my client. I felt amply repaid for the extra time ex-

pended when he said: "Fine. That's how it looks every day." And that, I take it, is the real purpose of a photograph.

Natural lighting is a delightful study by itself. You go on the call of a client and in looking over the house he will say, "Now in this room I would like you to show those two windows," etc. Here is a case, plate No. 2, where the only available light came from those two windows. A close study of the picture will show that the light came from the half of the window on the right of the room hidden by the door partition. The rest of the window shades were kept down for all but a second of the thirty-five minutes' exposure. An electrolier supplied sufficient light in the inner room without casting any cross shadows. A flashlight in this case would have sent the shadows in the opposite direction, giving a false idea of a window at the back of the camera.

In some forty odd churches photographed this year it has not been found necessary to set off a single flashlight. At the First Christian Science Church I was at first refused permission to take any pictures because another photographer at some previous time had "smoked them out." I exposed six plates in that church, plate No. 3 being one of them, and if anyone can do better by means of artificial lighting, by which I mean can show a photograph more like the church, then I am willing to be converted back to flashlights again. In this case a ten-minute exposure for each plate was sufficient.

There is no denying that a minimum of flashlight is a great help at times and at some times indispensable, but I am inclined to the belief that in most cases the artistic element is sacrificed in favor of the financial. And as a photographer brutally put it, "We are not in business for our health."

That might bring up again the oft-discussed question as to whether there is art in photography, but that is not the object of this article, although I do not think any architectural photographer can succeed without some artistic ability.

To succeed along this line of work an unlimited fund of patience is necessary; that comes first. Then, and this is of just as much importance, a knowledge of architecture should be obtained. An architect sees things in a different way from the layman, and the things he sees he expects his photographer to see and he is not satisfied unless he gets them.

I took up an architectural course just for this purpose, and the little knowledge I have already gained has proved one of the most valuable of my assets. One of the oldest established and most successful architectural photographers in New York to-day was at one time a draughtsman in an architect's office.

A good lens and a good plate are the two other essentials. Let the amateur along these lines make up his mind not how many plates he is going to take but how good a plate he is going to get. Let him sit down and study the room he wishes to photograph, and then let him give his flash lamp, with its accompanying smoke and dust, to his worst friend and then plunge boldly ahead, and although he may spoil the first few plates the right one is sure to turn up.

I can give no fixed table of exposures, as no two rooms have the same lighting, but after a time it will become as easy to get the right timing indoors as it is out of doors. Try it.



FIRST CHRISTIAN
SCIENCE CHURCH,
NEW YORK.

No. 3.

R. E. TEBBS.



"THIS LITTLE PIG
WENT TO MARKET."

GEO. E. BROWN.

CARBON PRINTING FOR BEGINNERS

By JOHN DOVE.

UNTIL a short time ago I was under the impression that printing in carbon was a very difficult process, capable of being used successfully only by the most experienced technician. Having an opportunity, however, of seeing some prints made by this beautiful process, I determined to try it myself, and to my surprise, after a few trials, obtained a higher percentage of good results than I had been getting with other papers.

A careful reading of the directions that accompany each package of paper, together with the few hints I give here, will enable anyone to get good results if a reasonable amount of care is used.

The materials used are few and need not be expensive. Here is a list of everything that is necessary: Two trays,

large enough to easily handle the size of prints you intend to make; an enameled dishpan, to hold hot water for developing; a thermometer, to test the temperature of solutions; a flat squeegee; a piece of sheet zinc or glass, a little larger than the print; two pieces of lintless blotting paper; one ounce potassium bichromate; an ounce or two of alum; carbon tissue, transfer paper, and a package of Solio paper.

To prepare the sensitizing solution, pour 10 ounces of hot water in a stone jar or pitcher, tie the potassium bichromate in a piece of muslin and hang it on a string so it just touches the hot water. It will dissolve in a few minutes, making a solution of deep orange color. When cold, add enough water to make 20 ounces. Pour a few drops into a glass, and to the remainder add common washing ammonia, drop by drop, until the orange color changes to yellow. The few drops poured into the glass are kept for comparison to tell when this change takes place. This solution should be used at a temperature of 60 deg. Fahr. If kept in a dark colored bottle it keeps indefinitely. I am still using a solution mixed over two years ago.

Now dissolve 1 ounce of alum in 20 ounces of water. This is to harden and clear the prints of bichromate after developing. This solution may be used until it becomes discolored.

Now we are ready to sensitize the carbon tissue. Pour enough bichromate solution in a tray to fill it to a depth of 1 inch at least. To the right of the tray place your piece of zinc (or glass) and the squeegee.

Now take a piece of carbon tissue and draw it through the bichromate, face up. (The dark side is the face.) Immediately turn the paper over and break any air bells that may be on the back. Turn over again and rock the tray, taking care that no air bells form on the surface of the paper. As soon as the paper becomes limp, which takes two or three minutes, remove it from the bichromate and place it face down on the zinc. Lightly pass the squeegee over the back once or twice to get rid of superfluous moisture.

Now pin the paper in a dark place to dry. When dry it is ready for printing. Do not pin the paper where it will dry too quickly, or it will become brittle and be liable to crack.

Neither should it be pinned in a damp place, for this might cause the pigment to become insoluble and make it useless. A good plan is to sensitize at night and pin the paper to a shelf in your wardrobe; it will then be ready for printing the following morning, and if kept in an air-tight can will keep in good condition two or three weeks.

For the first attempt a suitable negative should be chosen. The ideal negative for this process is one having a long range of tones, and with more contrast than is necessary for printing on gas-light papers. If time development is used for negatives, give one-fourth more time for a negative to be printed on carbon than for one to be printed on gas-light paper. For example, if a negative developed for 20 minutes gives a nice soft print on gas-light paper, one developed for 25 minutes would be about right for carbon.

Before printing, the negative must be provided with a "safe edge." This is simply a piece of black paper about $\frac{1}{8}$ inch wide pasted around the edge of the negative on the glass side. A better plan is to take a spoiled negative, soak off the film in hot water and paste the black paper around the edge of this. This is placed in the printing frame before the negative and saves the trouble of preparing all your negatives in this manner.

Now place your negative with a small strip of Solio paper in the printing frame and print in a good diffused light. Direct sunlight should not be used except for very dense negatives. Note the time you started printing. When the strip of Solio is printed slightly lighter than you wish the finished print to be, take it out of the printing frame and note how many minutes it has been printing. Now place in the printing frame your piece of clear glass, with the "safe edge" up, on this put your negative, film up, and on this your carbon tissue with face in contact with film of negative. Put out and print the same length of time the Solio was printed.

Fill one tray with cold water and in it put a piece of transfer paper, gelatine side up, and leave it there to soak. In another tray pour the alum solution, and fill your enameled dishpan with hot water, about 100 deg. Fahr. Get ready the piece of zinc, squeegee and two pieces of lintless blotting paper.



SHAN'T, WON'T, AIN'T.

HENRY HALL.

Take the carbon tissue from the printing frame and put it face down into the same tray that contains the transfer paper. It will curl up, but in a minute or two will uncurl again. When this takes place the two pieces of paper (pigmented side of tissue and gelatine side of transfer) must be brought together, under water. See that they are even and drag them over end of tray.

Lay them on the piece of zinc, the transfer paper underneath, and vigorously use the squeegee on back of tissue to expel all the water from between the two pieces of paper and insure perfect contact. It does not matter if the back of tissue is roughened while doing this, for it will be thrown away after developing. Now put the tissue with adhering transfer paper between the two pieces of blotting paper and place them under a pile of books or some other weight for about 20 minutes. At the end of this time take the tissue with transfer paper adhering to it and put into the pan of hot water. Break any air bells that form either on back or front. In a few minutes dark-colored pigment will be seen issuing from the edges. Wait a few minutes more and then gently pull the two pieces of paper apart.

Great care must be used here if you would avoid a mishap. The two pieces of paper should come apart quite easily, and if they stick let them soak longer. Do not try to force them or you will tear the gelatine film.

When you have succeeded in getting the two pieces of paper apart, the original tissue can be thrown away and the transfer paper will be seen covered with a dark sticky mass. Leave this in the hot water and slip your piece of zinc underneath to support it. Now, with a spoon, stir the hot water around so that it flows across the surface of print. This will gradually wash the pigment away, and in a few minutes the picture will begin to show through. Keep this up until the picture is light enough. If it has been overprinted it will be too dark, and raising the temperature of the water to 110 deg. Fahr. will help it a lot. If, on the other hand, it has been under-printed, the temperature of water should be reduced to 90 deg. Fahr.

Development is complete when the print is light enough or no more pigment can be washed away. The print should now be removed from the hot water and placed in a tray of cold water. Leave it in this for two or three minutes, and then place it in the tray containing the alum solution for five minutes. The print should then be washed in running water for half an hour and is then ready for drying.

The method of drying I use is very successful, and, to my knowledge, has never been published. Take a piece of clean



PORTRAIT:
MARION NOBLE.

FEDORA E. D. BROWN.

rag, soak it in water and wring it out as dry as possible. Fold it twice and place the prints face up on this to dry. Prints dry in this manner very slowly, and appear to be more flexible and show less tendency to curl than when dried rapidly. This method of drying is suitable for any printing process. After drying, prints are mounted in the usual manner on a suitable colored mount.

The description given here is known as the single transfer, and is the best for a beginner. In the finished print everything is reversed from left to right. This, however, is no detriment in landscape work or in portraiture unless there is a marked difference between the two sides of the face.

One is able to make prints in almost any color by the carbon process. For the beginner I would suggest a sea green for landscapes and portrait brown for portraits. Also choose a moderately smooth transfer paper as the rough papers are more difficult to work.

In conclusion, let me say that the process is not really difficult. If you have sufficient technical ability to make a good print on gas-light paper you can master the carbon process.

Observe perfect cleanliness, and pay attention to details and success will be sure to crown your efforts.

After you have made one good print you will be printing all your favorite negatives in carbon.



AMONG THE ENGLISH LAKES.

JOHN BEEBY.



THE WOOD PATH.

EDGAR A. COHEN.



MARINE LANDSCAPE
IN HAVANA HARBOR.

H. S. REDFIELD.

COLOR PHOTOGRAPHY AS A PAYING PROPOSITION

By H. F. PERKINS, University of Vermont.

THE things one hesitates to do on the ground of their costliness sometimes prove to have offered the most favorable opportunities for making money. Many amateurs have not felt that they could afford to take up color photography on account of their limited resources and the costliness of the materials. People who do not mind using up a whole roll of films in an afternoon think they can't afford to make one color plate, although it costs less and will in all probability amount to more in the long run. It depends, of course, on whether one wants quantity or quality.

The amateur who isn't ashamed to make pictures for money can earn much more in a day in the field of color photography

than with the old methods. There isn't the temptation to indulge one's generous impulse to make a print from this negative and that film for any friends that happened to be on hand when the picture was taken—an amiable weakness, but an expensive one. People realize that Autochrome plates are very dear, comparatively; they know that they are getting a choice thing when you make one for them and are willing to pay well for it.

The idea that certain makers of photographic plates and lantern slides have circulated widely to the effect that Autochromes are of use in the lantern only when a very powerful electric current is available, has no foundation in fact. Any ordinary lighting circuit is entirely adequate, unless the lantern is a failure, or unless the operator tries to cover an unnecessarily large area upon the screen. I have had very fair success with an oxyhydrogen light at 15 feet from the screen. In this field the opportunities of the Autochrome lantern-slide maker are almost limitless. Landscapes, paintings, architecture, ethnology, travel series, birds, flowers and all the rest of natural science, are waiting for the worker in this wonderful new medium. Autochromes are far superior to the best hand-colored slides in both fidelity and beauty, and yet they can be made at a price to compete with these, and at a good profit. Even when we are able to print photographs in colors, lantern slides in the colors of nature are not likely to be superseded. Their usefulness to the public lecturer and class-room instructor is immensely greater than that of the ordinary slides.

But the strongest appeal of the color plate is in its application to portraiture. It is easy to obtain "speaking likenesses" of persons who have never been successfully photographed before, so much of the individuality and charm of face in one's friends depending upon the coloring. This is peculiarly true with the children, and few things could be more worth cherishing than a true-to-the-life color-plate of a child amidst natural and harmonious surroundings.

It need only be brought to mind in a word that large possibilities are before the worker in color photography in connection with business and manufacturing concerns. Designers, decorators, painters, window-makers, architects, dry goods

stores, in fact, hundreds of enterprising people in a place of any size are only waiting for the enterprising autochromist to bring to them this new and wonderful assistant. It means larger profits to them, and they are ready to pay good prices for the work. You can serve your friends and yourself in an extraordinary way if you will become proficient in the making of color photographs.



SHRIMPERS.

LOUIS J. STEELE.



THE EDGE OF THE WOOD.

Theo. Eitel.

[illegible]

14



NO. 1: ILLUSTRATING TRAVELING SHEEP.

WALTER BURKE.

TRAVELING SHEEP

By WALTER BURKE, F.R.P.S.

IHAVE often wondered why more workers do not make photographs, using sheep as the principal object. I do not mean the pretty, pretty things of stall-fed animals so commonly reproduced in the English photographic journals, but *real* sheep, such as we see on every back country road in New Zealand and Australia, where they number sheep by the million. For instance, in Sunny New South Wales there are no less than forty-four million head, by the latest Government returns.

I have always intended to do quite a lot in this way, but a very busy life leaves me little leisure to do all the things I would like.

I can only recollect one real opportunity to make negatives of the kind I mean. Some years ago I was traveling by coach in the North Island of New Zealand, accompanied, as I invariably am, by a thoroughly dependable camera. On this occasion I had with me one of 4 x 5 size, with which I could make twenty-four exposures without reloading, which was lucky, for I was destined to use them all up before the day was out.

We came upon this big mob of sheep when they had effectually blocked up the narrow road cut out of the side of a deep



NO. 2: ILLUSTRATING TRAVELING SHEEP.

WALTER BURKE.

gully, or, as you would call it, canyon. The principal drover was busily engaged in preventing them going back, while away forward, hidden in the clouds of dust, we could hear the yells of the other drovers and the yapping of the dogs forcing the animals on.

The opportunity was too good to miss, and I quickly arranged for the coach driver to leave my luggage (I suppose I ought to say "grip") at the next stop, while I followed the sheep on their travels—and dusty it was, for there is nothing I know of equal to a mob of sheep for raising dust.

I quickly exposed all my plates and longed for more. As it usually happens, the best of the subjects were available when all the plates were exposed.



NO. 3: ILLUSTRATING TRAVELING SHEEP.

WALTER BURKE.



NO. 4: ILLUSTRATING TRAVELING SHEEP.

WALTER BURKE.

Illustration No. 1 shows where we met the sheep, and here we were delayed the better part of an hour. Nos. 2, 3 and 4 show incidents in the principal street of a country town. In No. 3 a five-horse dray is trying to get through the mob, and the man in the lead, driving the sheep from under the horses' hoofs, is practically hidden by dust, from which he emerges in No. 4 in strong silhouette. In No. 5 the sheep have reached more open country and just straggle along, picking at the grass on the roadside as they travel.

My hobby is more illustrative than pictorial photography, but there's a great field open here to the man who is willing and able to make the most of it. He will need a hand camera as near dust-proof as it is possible to make it—a quick eye, for the scenes change in cinematograph-like style—and last, but not least, he will not need to work in his best “store” clothes!



NO. 5: ILLUSTRATING TRAVELING SHEEP.

WALTER BURKE.



NATHAN T. BEERS, M.D.

S. H. Lifshy.





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IN THE PERGOLA.

RUDOLF EICKEMEYER.

SOME PHOTOGRAPHIC CRISES

By C. A. ZIMMERMAN.



THE changes in the art of photography are becoming exceedingly rapid, not to say critical or bewildering," was the remark made to me quite recently by one of the hustling juniors in our interesting profession. While I am not a centenarian, though long in the professional harness, I was able to glance retrospectively down the vistas of the past, and as events surged before my mental vision I was forced to say to my friend, "History repeats itself and the records of our art show no exception." It is true the hard-earned good results of the time of Niepce and Daguerre left the surprised and delighted worker rather breathless and fairly content with his production. This was not to be wondered at, as the literature and formulas of the art could and were contained in a mere pamphlet.

The undiscovered country was vast and lay at their doors throbbing with eagerness to be discovered, and the improvements and innovations burning with a desire to be born. Creation is a most powerful impulse and will not down. The writer never produced daguerreotypes professionally, but happily and innocently posed for them, and can now quite complacently contemplate his own portrait among others equally odd, elusive, awkward, yet intensely interesting and exceedingly valuable heirlooms.

Up to that period we depended upon the shears of the silhouettist, the brush of the painter and his degree of ability and his capacity of transcribing it; not to forget the wily and subtle flatterer that produced the deliciously precious, untruthful ivory miniatures; I am writing myself down as a heretic, but an indulgent one, for I am well aware that then as to-day pleased patrons meant success, fame and the concomitants of tainted money which we are still handling, for there is but the one medium.

Every important change in method or product meant and usually brought on a business crisis, and I will flash a few of these past your vision without dwelling upon them. The aristocratic daguerreotype, the miracle of the day, passed into history before the avalanche of the ambrotype—a murky and dingy collodion film upon a glass plate, and the first crisis stood disclosed, putting most of the earnest pioneers down



THE EARLY BOAT.

A. KEITH DANNATT.

and out, for newer, younger and more mercenary men usurped the new idea. Being frail, with none of the beauties of its predecessor, the glass picture had a brief existence; however, it contained the prophecy of the negative, for by transmitted light a dense and rather overdeveloped ambrotype really was a negative. The efforts of our foreign cousins sent the photographic print, which in a twinkling swept the murky and clumsy ambrotype into the waste heap.

Strange to relate, almost the very first to take up the new silver paper print and the negative that was necessary to produce it, were the best known of the daguerreotypists. They were artists by nature who recognized a new field and a new

medium for artistic portraiture. Things went rather smoothly. studios showed prosperity, the civil war in this country gave a great impetus to business, and good prices held steadily. The only ripples were caused by the introduction of albumen in place of the plain salted paper and the advent of the multiplying camera, for even in the sixties it was possible to get a double handful of "stamp" photos for a dollar. This was when "cartes de visites" brought \$7 per dozen and the 8 x 10 photos at least \$30 for the same number.



THE WATERING PLACE.

JOHN BEEBY.

More restlessness appeared when the high gloss and mat surface collodion papers came, which slowly displaced the albumen and plain papers; the real crisis came when the public's patronage waned, for no real new departure from the old and set lines and shapes held their interest. At this critical juncture the \$2 per dozen cabinets came in with a rush, and some fairly reputable studios became mere photograph factories and suffered through deserting patrons. There was relief in sight, however, for the platinotype, long known but not generally used, offered itself to the better men as a medium for the elevation of their art, and once more the flurried financial seas became tranquil; business at once revived and the best of prices

prevailed. An American public does not long tolerate even a very good thing unless it exhibits frequent and startling changes, and welcomes often an innovation that is not always an improvement.

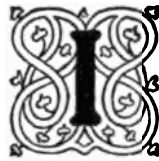
The crisis following the platinotype was exceedingly slow in coming, but come it did, and its departure is deliberate and its recession scarcely perceptible. In earlier days, and not so very long ago, it was possible to get a photograph only in a studio; to-day there are very few persons that have never been "snapped!" On every hand amateur household and outdoor kodakery supplements the work of the professional. Serious work, such as the photographing of children, still comes, but in a greatly reduced volume, to the studio; stamp and postal card photography covers the field fairly well. There are still more drains upon the vitality of the professional studio in memorial, post-mortem, residence and home interior work. All outdoor photography has gone to the commercial factory.

Verily, the professional studio depends to-day, pure and simple, upon the quality and amount of portrait photography, and right here comes the question of the product. Rapidly coming into use, the development papers are encroaching upon the field of the platinotype and some of its adherents are wavering. Have these papers come to stay? And what of the fickle public? Most professionals will tell you that the public likes the new papers, and does that not settle it? For a time! Many things go to make the change not altogether unwelcome. The printer is now quite accessible and the maker of the negative is at his elbow to supplement his previous skylight work, while observing the development of the print. Old-time printers bronzed by Old Sol no longer crave the lofty perch and the high temperature of that location, while artificial light brings a degree of certainty and precision of result that daylight never offered.

At this point we almost seem to agree with the hustling Junior mentioned in the opening lines of this paper, for it does appear that over night may bring a change of condition in our profession as well as in many other ventures of far greater magnitude. Happy are they who are so constituted that no change or crisis has any terror, and whose versatility and fertility of resource is unfailing.

THE POINT OF VIEW

By C. M. GILES.



It is undoubtedly unnecessary, at this late day in the history of photography, to suggest that much of the value of any photograph lies in the point of view; and to attempt to teach the intelligent readers of the Annual anything in that line, from the standpoint of photographic art, is beyond my purpose or capacity. I do not doubt that all are more or less familiar with the subject. If not, they should lose no opportunity to study the many publications which treat on that feature of the art, and by thorough experiment, based on such study, endeavor to gain a practical as well as theoretical knowledge of how to choose and secure the best.

We all know that the lens makes no discrimination as to its record of whatever is within its range except as controlled by conditions of light and shade, color values and focus. A negative usually includes all in the minutest of detail. But this is not exactly the line of thought that I have had recently in mind. There is another and more important point of view for the photographer to consider. I refer to the mental and moral point of view from which the work is undertaken. If we would analyze our intentions more carefully and ask ourselves "why?" more often, we would waste less good material and have less rubbish to throw away. The ease with which an exposure is made often tempts us to hasty selections, or lack of selection. Before the exposure is made we should first study whether it is really worth while. Will it serve any good purpose? We fail to realize that every print for which we are responsible has more or less influence for good or evil upon those who see it. It may be from the standard of art, or history, or science, or morals, but influence it surely has, although imperceptible.

It is a common saying that photography is educational, and from that it is argued that it is, of course, beneficial. That does not necessarily follow. Those who teach the young to

become thieves "educate" them in the broad sense of the word ; but we would hardly call the process beneficial to the student or to society.

So also there are uses of photography that are "educational" in a manner that tends to degeneration. In this class are not only the extreme examples of a certain class which, under the guise of "high art," not only suggest but obtrude the indecent, but any which appeal to the ignoble, the sordid, the meaner side of human nature, and those which give false views of life and distorted and false impressions of personalities. Photographers who intrude unbidden on the privacy of the individual and insist on the privilege of making exposures under the most embarrassing and incongruous conditions, certainly offend against all the codes of morality and decency. Photography rightly used is a noble art, and should not be degraded to the low plane upon which we so often see it exhibited.



FRIENDS.

S. DORAN.



THE SAND CARTERS.

E. A. BRAY.

PHOTOGRAPHIC ECONOMIES

By CHARLES E. FAIRMAN.



FORTUNATE indeed is the amateur photographer whose purse is long, and wide, and deep; who does not have to calculate the cost of apparatus, chemicals, plates, or paper; and yet, more fortunate is he, or she, who is able to find the means to gratify the love for this pastime even though handicapped by a light purse.

It is often the case that photographic material is sacrificed or abandoned on account of a belief that its age has lessened its value, and it is to those who, at times, because their paper or plates are old, and fresher ones not easily obtainable, may be compelled to forego the pleasures of photography, that I come with this message.

I would not for a moment argue that well-aged paper or ancient plates are just as good as those more recently manufactured. I do not believe this to be the case, and will not



Rudolph Duhrkoop.

try to convince others of the truth of a matter in which I have no confidence; but what I wish to convey is this: plates and paper can be saved and rendered quite valuable after they have been kept so long that they are usually considered worthless. In support of this statement I will cite three separate instances.

Some time ago I was quite anxious to submit a proof from a negative made for the purpose of a reproduction. It was a "thank-you" matter, and after finding that my proof paper was exhausted I made an attempt to secure a proof on some gas-light paper, given me as a trial package some years ago. The distance from a supply house and the press of time made it necessary to make an attempt to use this paper, although by all rights of popular belief it was aged beyond any safe expectation of adaptability for the purpose. I found upon trial that the paper was apparently worthless. Experimenting with bromide of potassium resulted in restoring the paper to a good printing quality; in fact, the paper seemed as good as new. The quantity of bromide used was large. The exact amount I have forgotten.



**A SUNNY CORNER
IN KAIRONAN.**

HILDA STEVENSON.

The second instance was the development of films exposed over two years before development. Bromide treatment, and that in liberal quantities, was resorted to, and it was found that this method benefited the films to a degree not considered possible. The amount of bromide used in this second instance is not remembered.

The third instance is of recent date, and the experiment recorded so that its value, if any, might be available to the readers of the Annual. The plates were purchased five years ago: the make of the plate does not matter, for this is not advertising space. The emulsion was considered slow, and for this reason the interest in this particular box of plates was not sufficient to warrant their use until July, 1909. On this occasion there was a need for photographic plates just then and there, and no time to purchase new ones; for the last three years the two plates used on this occasion had been stored in a plate-holder in a camera seldom used. This, it will be conceded, is not an ideal method of preserving the qualities of a dry-plate deemed desirable.

It was a case, however, of using these plates or going without, so with many misgivings I made the trial. I remembered my lesson in the restoration of paper, and thought that the same plan *ought* to be applicable to dry-plates.

I developed the plates in a normal developer in so far as the accelerator and reducer is concerned; the bromide of potassium, which I rarely use for ordinary work, was the anchor of safety. Perhaps the formula should be given:

Sodium sulphite (1 to 8 solution), 4 drams; sodium carbonate (1 to 4 solution), 3 drams; pyro (dry), 6 grains; bromide potassium (10 per cent solution), 30 minims; water added to make 6 ounces.

With the use of this formula the plates developed as properly exposed fresh plates, and the resultant negatives are snappy, with plenty of density, technically good negatives of unattractive material.

This formula is not a hard and fast rule; possibly its greatest value is in the theory that old paper and old plates need a large amount of bromide of potassium to restore the quality existing at the time of their manufacture. I am not a chemist or a manufacturer of paper or plates. I only know this has

worked well for me. It may be worth the while for others to try the same experiment.

Do you ask why I have not illustrated this article by a print from one of the negatives referred to? The reason is that the subject was that of the home of a young couple who have started in life by making their own home with the labor of their own hands in one of the suburbs of Washington. They have solved the question of emancipation from the rent day period. They are content to live simply and happily, free from debt, and while they have named their little bungalow "Ownit," the picture of their home and this young couple would hardly be of sufficient interest to the readers of the Annual.



OUTDOORS.

LOUIS FLECKENSTEIN.

A NEW YEAR SUGGESTION.

By HENRY C. DELERY.



HAT to do with one's pictures is often the perplexing query of many a camerist and it occurs to me that perhaps the happiest solution of this problem is in the making of souvenirs or mementoes for our friends. Post cards, records of outings and such like have always awakened pleasant memories in their recipients, and at this joyous Christmas time, when one is in a dilemma to find suitable gifts, why not make calendars? What can be more appropriate and acceptable? A calendar is one of the necessities of life, and by adorning it can be made ornamental as well.

Of course the idea is not new. The stores at Christmas time are replete with blanks prepared to receive the pictures, but these bear too much the conventional stamp of commercialism and lack that finesse or, if we are liberty to use the word, artistic conception of the home-made article.

Calendars may be made in various ways, according to the taste of the individual; may have only a single card, perhaps six or even twelve pages. The latter with one sheet for each month gives more scope for illustrations and is undoubtedly the best, and a few hints are here offered for the preparation of one of this character.

It is important to select appropriate pictures with reference to each particular month and these should be mounted on cards which are in keeping both with the pictures and time of the year in which they will appear; in this manner we add variety and break the monotony which otherwise would prevail, and it also affords a proper setting for each individual scene. A last suggestion, a finishing touch, is to add a little verse in keeping with each month or season. Pictures and poetry go hand in hand and in no other manner do they find a better companionship.

The first or show card should be more elaborate than the succeeding ones and an ornamental border will add materially



CAPRICE.

Carle Semon.





CALENDAR.

HENRY C. DELERY.

to its embellishment. This is not the difficult task that it may appear and it does not require the skill of a draughtsman to design the ornamentations—only a little ingenuity is necessary. By looking through the advertisement pages of some of the magazines a few designs will be found which readily adapt themselves to our purpose; all that is required to make a

careful tracing of these in transparent paper and transfer the same to a sheet of stiff paper—Strathmore board is perhaps the best, as it has a fine surface for water-coloring—and after the border is well outlined in pencil, it might be gone over with colors, either the Japanese or the ordinary water colors used to tint photographs.

The selection of views to illumine the pages must be guided to a great extent by the seasons as they occur in their respective localities. In the South, our coldest month is usually February and consequently a snow scene and one suggestive of winter, mounted on a white card with a white line as a border, completes a pretty scene.

Boisterous, tempestuous March, the connecting link between winter and spring, when winter in its last throes is gently soothed by the mild touch of warm days to come, is one that is suggestive of scurrying clouds and melting snows.

April, the herald of spring, calls to mind the budding of the trees whose tender shoots announce the coming of life outdoors—a delightful month for forest and woodland scenes.

No prettier subject could be chosen for the merry month of May than a group of flowers, those beautiful children of Nature with which she is so bountiful during this glorious month, and which is happily prolonged into June, so aptly described by the poet:

Then came the lovely June,
With a rush of blossoms and music
Flooding the earth with flowers
And the air with melodies vernal.

With the coming of July the young man's fancy turns to thoughts of—not as Tennyson would have it, but something more practical—vacation, giving innumerable ideas for pleasing pictures of camping scenes, woodland views and quiet streams.

August: We again quote from the poet's inspiration:

The quiet August moon has come,
A slumbering stillness fills the sky
The fields are still, the woods are dumb,
In glassy sleep the waters lie.

A fitting description for our midsummer month when the heat is at its height and poor suffering humanity seeks solace at the seashore for refreshing breezes. Sail boats always make pretty pictures and add variety to our list.

September comes singing through the harvest field, sickle in hand. With the refreshing nights and sunny days comes the ripening of the fruits and the harvest is on. The ripe grass falling under the rhythmic clatter of the mower and the fields fragrant with the piled-up mows of new hay, furnish elements of scenes common enough to most of us.

The Indian summer! What delights are portrayed in this beautiful month of October. The golden days and silvery nights, bracing atmosphere, the woods decked in their finest attire, the foliage of the trees blending from darkest green to yellow and deep reds. Here it is that the camerist finds delights in Nature studies and abundant subjects for his delectation.

But alas! what a change in one brief month. What a pall comes over Nature! November, the gloomiest month, spreads desolation over the glories of past days. This little verse aptly describes it and suggests the motive for an illustration:

Now wail low winds about the forest leaves;
Now life grows cold 'neath cold and dreary skies,
And rustling ankle deep in falling leaves
The lone deserted woodpath blanching lies.

December has the spirit of Christmastide. Pictures and poetry should show a joyous feeling of good cheer. It is an easy subject to illustrate and Longfellow furnishes the poetical thought:

I heard the bells on Christmas day
Their old familiar carols play,
And mild and sweet
The words repeat
Of peace on earth, good will to men.

When printing the pictures it is a good practice to select a paper with the same motive that we employed when choosing our cards and subject. If one has the time and inclination platinum gives better results for general work, but other proc-

esses are very acceptable, as, for instance, Royal Bromide re-developed in sepia for a harvest scene, or even a plain blue print for a marine subject.

As to the cards, the paper used for magazine covers of different tints answers the purpose admirably.

When the cards are all complete, a couple of holes are punched at the top and a silk cord or ribbon is passed through and tied in a bowknot, and the calendar is complete.



A GREETING CARD.

JOHN BEEBY.



THE SANCTUARY.

LOUIS J. STEELE.



PECHEUR A LA SENNE.

A. GOMEZ GIMENO.

OZOBROME OIL PRINTING

By THOMAS MANLY, F.R.P.S.



It is surprising how rapidly the oil printing process has supplanted gum printing, especially on the Continent of Europe.

To those workers who have been educated in the use of a brush to express personal feeling oil printing has a distinct fascination and is superior to gum, inasmuch as it is an additive process, the pigment being put on where it is wanted, instead of, as in gum printing, being removed where it is not wanted.

In the direct or insolation process worked out by Mr. G. H. Rawlins, paper coated with gelatine and impregnated with a bichromate salt is exposed, when dry, under a negative until a distinct brown image is visible. Wherever the light has had



AT HAVEN IS REST.

W. T. KNOX.

access to the paper the gelatine is tanned and an image in more or less insoluble gelatine is produced. After washing out the bichromate salt, the image will take greasy ink in proportion to the degree of insolubility of the image, and those portions of the gelatine which have been protected from light will refuse any greasy substance. Some considerable practice is required in applying the ink, the action of the brush being quite unlike the usual method of laying on as in printing a picture.

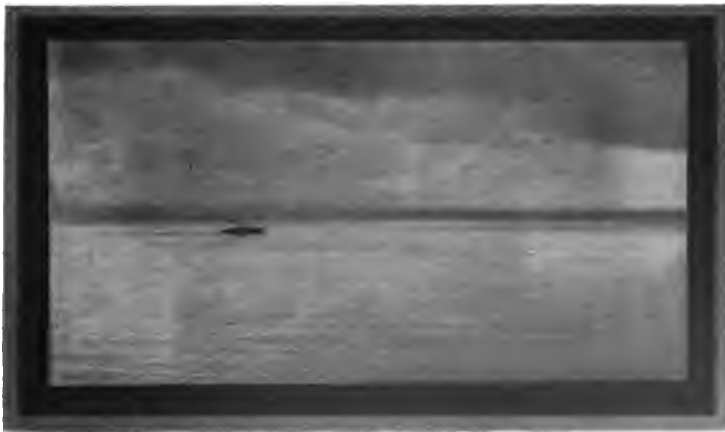
On the introduction of Ozobrome it was easy to see that such a method might be useful in converting bromide prints into oil pictures, thus securing a great advantage where enlargements have to be made. Mr. C. Wellborne Piper was the first to work out such a method, which has been christened "Bromoil" and which is now being worked by many amateurs who make enlargements and have little daylight to spare for exposing.

The Bromoil process, however, requires the use of a fairly strong solution of sulphuric acid, which is objectionable to those who know nothing of its corrosive nature and its heat generating properties on the addition of water. My object has been to dispense with the use of sulphuric acid and to shorten the procedure. After many experiments I find the following method works well.

Bleach the bromide print in a bath consisting of the usual Ozobrome working pigmenting bath (the same strength as required for gelatine Ozobrome), 1 part; one per cent solution of hydrochloric acid 1 part; (the bleaching action is complete in 1 to 4 minutes) then transfer the bleached print, *without washing*, to a fixing bath consisting of: Water, 20 oz.; hypo., 2 oz.; liq. ammonia, fort, 60 minims; where it should remain from 2 to 6 minutes, according to the time the print took to bleach. Thus, if the print bleached in one minute, it should remain in the hypo bath 2 or 3 minutes; but if it took 2 or 3 minutes to bleach, it should remain in the hypo from 5 to 6 minutes. Finally wash for 5 minutes in running water. After removal of the superfluous moisture, by gently mopping or wiping with a piece of soft muslin, the print is ready to ink up.

As in Gelatine Ozobrome there is also a transfer method by which a specially prepared gelatine surface can be impressed by a bromide print, producing an image in insoluble gelatine:

reversed as to right and left, but which can be easily rectified in enlarging. The bromide image in this case is also tanned and acquires the same property of taking greasy ink. The bleaching bath described above is used. The bromide print is immersed in a 5 per cent. solution of common salt. The specially prepared transfer paper is soaked in the bleaching bath until saturated, when it is placed, gelatine side uppermost, upon a sheet of glass. The bromide print is now removed from the salt bath and laid, image side downward, upon the soaked transfer paper, avoiding airbells or any lateral movement. The two papers are squeegeed together with a roller squeegee and placed upon another piece of glass to complete the chemical action. The bleaching takes place fairly rapidly (from 5 to 15 minutes), the gradual disappearance of the silver being distinctly seen on looking through the adhering papers in front of a fairly strong light. When thoroughly bleached the two papers are separated and washed until all yellow coloration has disappeared. Neither the impressed transfer paper nor the bromide print are in a condition to ink up until they have been dried and resoaked in water for 5 or 10 minutes. Of course the bromide print will require to be fixed and it is a good plan to place it, on separators, from the transfer paper, in the above-mentioned hypo-ammonia bath for a few minutes—then wash and dry.



A MOVING SPECK.

V. SERIN.



AN OCTOBER MORNING.

J. F. WILDE.

MY EXPERIENCE WITH THE AUTOCHROME PLATE

By H. O. KLEIN, F.R.P.S.

LET me state at this point that I have little else but praise for this beautiful process, and that my few failures were those common to all beginners.

The process has an enormous range of possible applications which readily suggest themselves, but what I wish to deal with are the byways, which are frequented by few, and which were the real touchstones indicating a few limitations, which are none the less of interest.

The process itself served a similar purpose: it separated the chaff from the corn, the intelligent, careful operator from the slap-dash worker, and to hear a man denounce this proc-



STUDY.

LOUIS FLECKENSTEIN.



VESUVIUS.

GUSTAV EISEN.

ess as an unsatisfactory one, is to listen to his own confession of total incompetency or to an exhibition of a rare species of red tapeism, which to the scientific worker must forever be incomprehensible.

However, we have met some who have failed, and to whom my remarks cannot apply. I mean the spectroscopist. The faithful rendering of color, the brilliancy and purity of the transmitted light of an Autochrome, know of no equal, and the man behind the spectroscope saw one of his wildest dreams realized—to photograph the hundreds of gorgeous colored lines, which mean so much to the astronomer, photographed in color.

Now, although careful consideration of the basis of the Autochrome would render experiment superfluous, many made the attempt and were bitterly disappointed when the Autochrome only recorded blue violet, green and red of the wave length of the color of the starch particle itself, only varied in intensity by the superposition of the black silver deposit. There was an absence of all yellow, the pure spectral red and the incomparable transitions of the spectral hues were only indicated by lacking brilliancy of color. The Autochrome spectrograph occasionally met with, presents in a nutshell the weakest points of the Autochrome.

When photographing other but pure spectral lights, they make themselves occasionally noticeable, but only in flower photography, where color is exceptionally pure do they amount to a formidable obstacle.

To quickly arrive at colors which should, if possible, be avoided, I set up a series of test tubes containing a great variety of very pure solutions of aniline dyes, and of all the most unsatisfactory rendering was that of Rose Bengal, Magenta and Pinachrome. All the other colors were faithfully recorded, although somewhat wanting in brilliancy, which was most noticeable in the case of pure yellow dyes.

Rose Bengal, etc., were recorded in a uniform yellowish-red, and when I made a counter test, photographing carnations of spectral red hue, I met with failure.

Now the tint I refer to plays a very important part in nature, and a great variety of subjects must therefore be considered unsuitable for Autochrome. Should it not be possible in the future to readjust the color triangle of the components of this screen plate and thereby widen the possibilities of probably the most ingenious photographic discovery since the days of the Chromoscope?



TWA DOGS.

S. DORAN.

A DIAPHRAGM AND SHUTTER FOR PINHOLE WORK

By JAMES THOMSON.

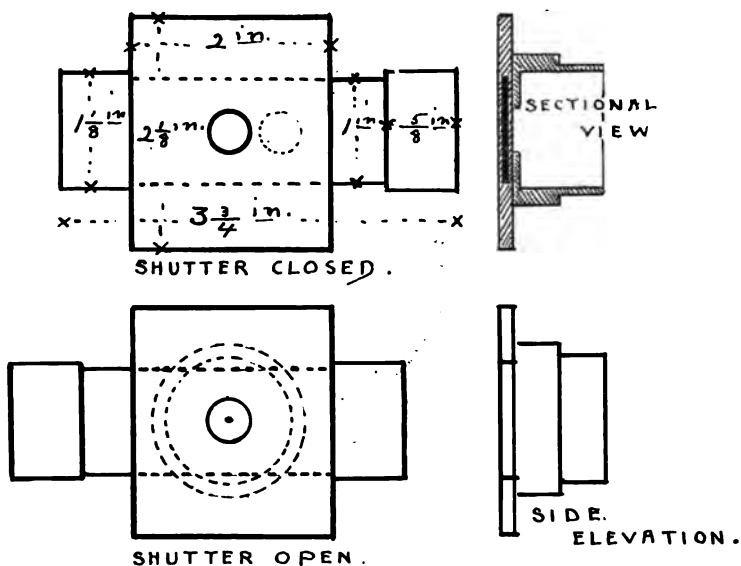


OT all camera manipulators are taking pinhole views, but for such as may occasionally resort to so small an aperture is herewith submitted a practical and easily home fabricated little diaphragm and shutter which has the added advantage of fitting into an upper waistcoat pocket when not in action. The original was made of black vulcanite rubber (a discarded holder slide, but in lieu of such most suitable material black mounting card might answer. The back part was made from a pasteboard pill box, minus the cover. Fastened to the front part with black passe-partout binding it was given a finished appearance by covering—outside and in—with the same material. The thickened portions and each end of the shutter, which operate to stop it at the right place when sliding it back and forth, may be provided by pasting upon the vulcanite pieces of thin cardboard and then covering the whole with gummed binding. The nearly square center which forms the diaphragm proper was made of three thicknesses of the vulcanite bound together top and bottom with gummed binding.

The vulcanized rubber in so thin a sheet as is found in a plate holder slide will be found to be extremely brittle when attempts are made at cutting with knife, saw or drill, but all such trouble will vanish if the rubber is slightly heated over a gas jet before beginning operations. If bent or twisted when working, as quite often happens, it may be brought to perfect flatness by first heating and then placing under a flatiron upon a level surface, such as a table top, until cool, which will be in a few minutes.

The pin, or rather needle apertures, are best made in half-inch squares of brass, the writer finding numbers 8, 10, 11 and 12 most useful, the first mentioned number for broad effects, the last for the finest definition, such as is required in copying.

The various little pieces of brass can be carried in a pill box and used, first one and then another, as occasion demands. The small squares of brass are most conveniently utilized by mounting each on its circular piece of black card, or thick paper, made to fit into the tube at the back of the shutter, though where but a single size of aperture is wanted it may be made a permanent part of the appliance.



In use one has but to unscrew the regular shutter pushing the pinhole diaphragm with the opening lift in the front board. When made to fit the hole in front board rather snug there is small danger of leaking light, but to make assurance doubly sure a thread of linen may be wound around the paper tube, a smear of glue of photo munter rubbed over it, then when the tube is screwed into place the linen thread will fall into the grooves of the brass flange, thus making a lightproof joint, as the whole will harden in whatever form the linen and glue may take.



WINTER DUSK.

F. C. BAKER.



BABY FRANCES.

Shewell Ellis.



A COUNTRY BOAT
ON LAKE MAGGIORE.

[No. 3]

J. DUDLEY JOHNSTON.

PANCHROMATIC PLATES FOR HOLIDAY WORK

By J. DUDLEY JOHNSTON.

IHAD been using orthochromatic plates—the yellow-green sensitive—for some years before trying those sensitive to red. As I became more experienced in the use of ordinary ortho plates, I could not but feel that, superior as their renderings were to the non-color sensitive plates, they were blind to many tints that prevail in Nature.

At first I went only so far as to try the Verichrome plate of Messrs. Wratten & Wainwright, which, besides having a slight sensitiveness to the red, is a very fast plate and suitable for hand-camera work under suitable conditions with so deep a screen even as the K2 produced by the makers for use with their plates and necessitating an increased exposure of about



ON LAKE MAGGIORE,
ITALY.

[No. 1]

J. DUDLEY JOHNSTON.

five to six times. My camera work is done almost entirely during my summer vacation, usually abroad, and must be adapted to the exigencies of rapid travel away from the conveniences of a dry, dark room at home. Accordingly the first problem that presented itself was how to charge plates, etc., while touring, as the portable lamp with ruby glass was no longer safe with the Verichrome plate owing to its red sensitiveness. This I overcame by having the lamp fitted with a screen of the deep ruby-stained silk fabric produced by Dr. Miethe, of Germany, which passes sufficient light of a safe character to do all needful work at night.

The renderings of landscape with the Verichrome proved so great an advance on the ortho plates previously used that next year I determined to go a step further still and use a plate equally sensitized for all parts of the spectrum. The drawbacks to face were, firstly, the difficulty of providing a thoroughly safe light to handle the plates, and secondly the comparative slowness of the plates. However, as I was going to Italy in May and June, I concluded that the light rapidity there would to some extent overcome the latter objection. As



ISOLA DEI PESCATORI
LAKE MAGGIORE, ITALY.

J. DUDLEY JOHNSTON.

regards the first drawback, I met this by having a folding lamp made for me, consisting of two metal sides hinged together so that they formed, when opened out, two sides of a triangle the base of which consisted of the special glass safelight, the whole fitting into a metal base which carried a paraffin candle or nightlight, while a similar triangular metal cover formed the top. Of course properly trapped ventilation holes were provided top and bottom. The safelight was one of those made by Messrs. Wratten & Wainwright for use with their color sensitive plates and consisted of a yellow and a green sheet of glass enclosing a thick sheet of green paper which is calculated to pass the maximum amount of visible light compatible with safe working of the plates. Naturally the light is rather feeble, but at night the eye soon becomes accustomed to it and it provides ample illumination for those who are thoroughly acquainted with the working of their apparatus. That the light is safe goes without saying. I have tested it by exposing plates to it for three minutes, at a distance of six inches, without a perceptible trace of fogging. The lamp is so made that the glass safelight, when not in use,



ST. MARKS, VENICE.

J. DUDLEY JOHNSTON.

is enclosed between the hinged metal sides and thus protected from possible injury or breakage.

As soon as I had settled my Italian tour I proceeded to test the red sensitive plates that I have alluded to—the Panchromatic plate, also made by Messrs. Wratten & Wainwright—so as to understand thoroughly its working, and discover whether it had any peculiarities or idiosyncrasies that would need humoring in practice. I found it a perfectly straightforward plate to manipulate and develop, giving very ample density with entire freedom from fog, of very fine grain and so rich in silver that all other plates that I had used previously looked poor by comparison. But the most striking difference shown by the new plate, and the direct result of its almost perfect red sensitiveness, was the wonderfully increased subtlety of the gradations. One became aware at once how large a part red plays in all the tones of Nature, even when least suspected, and how much the non-red, sensitive plate fails to record.

I soon found out one point about the plates that rather militates against them, although no doubt the makers may im-



Rudolph Duhrkoop.



EVENING CLOUDS,
LAKE COMO.

J. DUDLEY JOHNSTON.



THE LAKE OF COMO
AT LENNO.

[No. 4]

J. DUDLEY JOHNSTON.

prove it as time goes on ; that is, that each batch is liable to be of widely differing speed. This is in no way the fault of the makers, but is due entirely to differences in the properties of the dyes used in sensitizing, which it has been found impossible to overcome in spite of the resources of modern chemistry. The makers do the best within their power, for they supply with each box full particulars of the speed of each batch in terms of the Hurter & Driffield, Watkins and Wynne systems, so that there can be no excuse for giving the wrong exposures in practice.

When I found out this variation in speed, I got my dealer to write a couple of months in advance requesting Messrs. Wratten & Wainwright to reserve for me a supply out of the fastest batch they turned out before I went away. It proved to be a wise precaution, because while the average speed of the plates in my experience is about 180 Watkins, I was able to go away with a full supply of double that speed, which is a consideration when circumstances necessitate short exposures.

In actual practice I find that, used without a screen or light filter, the Panchromatic plates show only a moderate improvement in truth of tone compared with a rapid ordinary plate;

but when used with the special screens, K1 and K2, provided by the makers the improvement is quite marvelous.

The makers err, I think, in stating that the K1 screen necessitates an increase of only one and a half times, and the K2 only three times the normal exposure. In my practice I find it best to reckon three times and six times, respectively, and when feasible, even eight times for the K2, as the plates have great latitude and stand an ample exposure with advantage. So much of what is described as over-correction is nothing more than under-exposure and over-development. My opinion is that within reasonable limits, and provided a sufficient exposure is given, it is practically impossible to over-correct the color sensitive plates of the present day.

As for the practical merits of the plates, I must refer the reader to the illustrations which will I trust be found an ample vindication of the claims that I have made for the use of the red sensitive plate for all serious photography of Nature.

A note about exposures may be helpful: No. 1, Lake Maggiore; $1/35$ th sec. at F. 5.6, K2 screen. No. 2, Isola dei Pescatori; $1/35$ th sec. at F. 6, K2 screen. No. 3, On Lake Maggiore; $1/35$ th sec., F. 4.8, no screen. No. 4, Lake Como from Lenno; $1/6$ th sec., F. 6, K2 screen. No. 5, Evening Clouds, Lake Como; $1/6$ th sec., F. 4.8, K2 screen. No. 6, St. Marks, Venice; $1/36$ th sec., F. 6, K2 screen.



INTO WATERLOO STATION,
LONDON.

THOMAS F. BROGDEN.



H. W. HALES.

STEREOSCOPIC PHOTOGRAPHY.

By H. W. HALES.

EVERY little while some writer in the photographic journals predicts a so-called "revival" of this interesting branch of the art, and while it may be coming, it is certainly much slower in doing so than the proverbial Christmas. There is no doubt whatever that a really good stereoscopic picture presents a lifelike reality that nothing else does, and it does seem strange at first thought that it is not more widely popular.

The présent generation of photographers, however, knows very little about it, and it is altogether too much trouble for the "button presser" to go to, so he does not attempt it. Another thing about it is that it requires a special apparatus, besides care in taking the views and mounting. Much has been written on the subject, but it is a lamentable fact that most of it is a rehash from old works or books, and even where valuable information is given it is often of little use, owing to its being full of antiquated methods and ideas.

As there are some excellent stereoscopic cameras now in the market, and the methods of printing and finishing are now



PORTRAIT OF MRS. B.

FEDORA E. D. BROWN.

much simplified, there is a good chance for the expert worker to produce something of value in this line, and it is to be hoped that it will be taken up by the better class of workers until stereoscopic photography occupies the place that it is justly entitled to—but which it has not held for many years.

There are several reasons why the stereoscopic camera is particularly valuable to the careful worker, and one is the many uses it can be put to: excellent lantern slides can be made from one-half of the negative, full-size views can also be made on the plate by removing the partition from the camera and by using 5 x 7 plates a very nice postal card print can be made $3\frac{1}{2} \times 5$ inches. Taken altogether there is probably no branch of photography that offers so many advantages, and the so-called revival cannot come any too soon for the good of photography. For the benefit of those just taking up this branch I would say that there is no doubt whatever that the 5 x 7 size camera is the best size for general use. Some years ago the 5 x 8 was largely used and it had the advantage that the lenses could be placed further apart (4 inches) and by so doing the stereoscopic effect could be much increased. It was found, however, that so much of the negative was wasted or not used that it was cumbersome as well as expensive, hence 5 x 7 is the better plate to use.

English stereoscopic cameras, as well as other foreign makes, are of little use here, as they not only use an odd size plate, but they are made in such a way that they frequently leak light. This last fault is the more to be regretted as the workmanship is often otherwise extremely fine and often leaves little to be desired.

To get the finest results possible in stereoscopic work it is necessary to be able to adjust the width of the lenses on the camera, and while the usual $3\frac{1}{4}$ inches will do very well for near-by objects it will be found entirely inadequate when distant views are desired. Then again the best results are often obtained by stopping down the lens and giving a long exposure, and this is where the button presser often comes to grief, as the more perfect the negative the better the given picture will be. Stereoscopic portraits are best made by using the lens wide open or with a large stop and those who have never seen a good stereoscopic portrait have something yet in store. As my

space here is limited, only a very brief outline can be given, my object in writing being simply to call attention to this particular branch in the hope that others may follow it up as I have done.

There is nothing more interesting than photographing subjects or objects at different distances and with different apertures of the lenses and carefully noting the finished results. Some views may be taken with the lenses separated only a few inches. Distant views may be taken by moving the camera sideways—even some feet—and yet the finished pictures be alike in stereoscopic effect, and this is hard for the beginner to realize until he understands the subject. One of the best uses the stereo camera can be put to is the making of glass transparencies for the stereoscope. Objects in this class of views appear to “stand out” in such a way that they are certainly a revelation to those who see them for the first time and are undoubtedly the finest of all stereoscopic pictures.




THE BROOK.

EDGAR A. COHEN.

PLAIN PAPER PRINTING

By G. T. HARRIS, F.R.P.S.

HEN one considers the variety and beauty of the results obtainable upon what is known as "plain paper" it is difficult to account for the neglect that has overtaken the process. Some few years ago there was an apparent revival of the process, mainly due to the enthusiasm of a few men whose experiments expanded the capabilities of plain paper printing in a marked degree. When these enthusiasts discontinued their work, obscurity again overtook plain paper printing; and now; with the tendency of the modern photographer to rely solely upon the dealer for his material, it seems idle to expect an awakened interest in this process. And yet it is a process that should especially attract the amateur picture maker, by reason of the facility with which it can be prepared, and also because such a variety of surface and color are obtainable with it. It may be conceded that, as a field for photographic gymnastics, it stands no chance against "gum" and "oil"; but there are, even now, many quite good photographers who are satisfied with the sober literalness of a good "straight" print; to such I would cordially recommend a trial of plain-paper printing.

It is one of the advantages of plain-paper printing that almost any kind of paper can be used, provided it is sufficiently pure to allow of its being sensitized without showing metallic spots; in practice, however, one rarely needs more than three or four different kinds. A paper known to artists' colormen as "Japan A. A." is an excellent paper to use, and so is "Japanese parchment." For small work, requiring a smooth surface, Rives plain paper is all that can be wished for. Taking paper all around I find none so good as the various kinds of "Whatman."

Having procured the paper, it is cut up into a convenient size for floating upon the salting and sensitizing baths, and the



BY THE FIRESIDE.

Louis J. Steele.



HOME PORTRAIT.

C. F. CLARKE.

larger this size can be kept the better, as economy in time and material are thereby effected. A mark should be made in the corner of the sheets to indicate the side subjected to salting and sensitizing.

The formulæ for salting that exist in the various photographic handbooks and periodicals are very numerous, and very perplexing in a number of instances. When I commenced plain-paper printing I was led by the literature of the subject to expect that, by using different chlorides, I could obtain widely differing colors in the finished prints. In practice, however, I find that the resultant color is largely independent of the chloride used; the papers may differ considerably in color in the printing frame, but, in washing the print, the difference almost disappears, and any remaining difference is obliterated in the toning bath. I have made careful experiments with all the chlorides in general use, and also combinations of them, without being able to detect in the finished print a difference in color that might not be due to a more or less prolonged action of the toning bath. The following formulæ are sufficient for all practical purposes, and give excellent results, but for reasons given further on I prefer, myself, and always use, No. 4, as by its aid I have obtained very beautiful results:

No. 1: Nelson's No. 1 gelatine, 60 grains; sodium chloride, 300 grains; ammonia (.880), 5 minims; water, 20 ounces.

No. 2: Nelson's No. 1 gelatine, 60 grains; ammonium chloride, 160 grains; sodium chloride, 60 grains; sodium citrate, 200 grains; water, 20 ounces.

No. 3: Nelson's No. 1 gelatine, 100 grains; ammonium chloride, 30 grains; negative varnish, 2 ounces; water, 8 ounces.

No. 4: Nelson's No. 1 gelatine, 60 grains; barium chloride, 500 grains; negative varnish, $\frac{1}{2}$ ounce; water, 20 ounces.

So far as my knowledge goes the addition of negative varnish to a salting formula was first suggested by W. K. Burton, though the idea may have been derived from Cooper's well-known resinized process. However this may be, varnish in the salting solution is a most valuable addition, as it gives an eminently pleasing surface to the print, besides affording better tones. I am convinced that anyone once using a salting formula with this addition will not rest satisfied with a plain salting solution. The amount of varnish may, of course, be varied

to suit individual requirements; it also depends to some extent on the degree of consistency of the varnish itself. The varnish used in the formula given above is prepared by myself, and is much thicker and deeper colored than the negative varnish usually supplied by photographic dealers.

Before proceeding to salt the paper it must be carefully dampened by going over both surfaces of the sheet with a clean sponge moderately wet, then laid on one side for some time, to allow of even expansion. If dampening the sheets is performed about half an hour before coating they should be found in a very tractable condition when ready to salt. It is generally recommended to immerse the paper bodily in the salting solution, but if the paper is in a flaccid condition, as it should be when it has been dampened, it may be floated just as readily on the salting as on the sensitizing bath, and it seems rather more workmanlike to keep the solution confined to that surface of the paper which is to receive the silver solution. A flotation of three minutes for smooth-surfaced papers, four for medium, and six or seven minutes for rough surfaced are good average times. The quicker the paper is dried after its removal from the bath the better, as it is most desirable to keep the salting solution as much as possible on the surface of the paper.

Two methods of sensitizing the salted paper are open to the worker: flotation upon a neutral silver bath, or ammonio-nitrate of silver applied to the surface by aid of a brush. For some reason the weight of authority is in favor of the ammonio-nitrate method. I have carefully tried both, and my own preference is for the neutral bath and flotation. The ammonio-nitrate method certainly prints quicker, and if black colors are desired in the finished prints some help may be given toward this end by the blue-black of the ammonio-nitrate print. On the other hand, the very limited time the paper prepared by the ammonio-nitrate bath will keep in good condition is a decided disadvantage, and unless the operator has considerable experience in coating with a brush streaks and irregularities are liable to occur. I strongly advise any intending worker in plain paper to excite his paper by floating it upon a silver bath of fifty-grain strength (i. e., 50 grains of silver nitrate to each ounce of water), which is better used in a neutral condition. If the back of the paper is carefully dampened some time be-

fore sensitizing, in the manner described for salting, no difficulty will be found in placing the sheet evenly upon the solution, however thick the paper may be. The time of floating should be liberal, not less than three minutes for thin papers, and as long as six for heavy papers.

The paper is removed slowly from the silver bath without removing the surplus silver from the surface of the paper by drawing it along the bath's edge, as is done in silvering albumenized paper, the aim being to retain as much free silver on the surface as possible. On removal from the bath the paper is *at once* dried off before a keen fire, or over an oil stove. This operation is most important for the successful production of vigorous prints. I have made careful comparative tests on this point, and I find that the longer time the paper occupies in drying the flatter the prints appear when finished. A sheet of paper that occupies two hours or so in drying yields prints fit only for the waste paper basket, compared with prints from paper dried straight away. After excitation the paper keeps perfectly for a week or ten days in winter, if the bath is kept free from organic impurities.

It may be that the slowness of plain paper in the printing frame is accountable for some of the neglect the process has met with. Slow it certainly is when compared with most of the printing papers in use at the present time, and as a considerable amount of over-printing is necessary if platinum black colors are wanted it does most assuredly try the patience of the photographer, especially in winter. To obviate this drawback and place plain-paper printing on a level with other papers as regards rapidity I now print all paper until the detail is well out, then obtain the necessary depth by development. The results obtained by partially printing and subsequently developing the paper are quite equal to those printed right out, and are, I believe, much more permanent. The operation is both simple and certain, and it has this decided advantage, that when warm colors are desired in the finished print it gives a color to start with that is very favorable to their production. Another point in its favor is, that brighter prints can be obtained from thin negatives than when printing out is adopted.

Several formulæ are extant for developing partly printed proofs, one, as good as anything, being that given by the East-



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"EIGHTEEN THIRTY"

Charles H. Davis.

man company, which is: Hydrokinone, 24 grains; citric acid, 60 grains; acetate of soda, $1\frac{1}{2}$ ounces; water, 30 ounces.



RUDOLPH DUHRKOOP.

Of course, the amount of development requisite is regulated by the depth to which the printing has been carried. I have developed a print bearing only a faint image to its proper depth, but such a proceeding is not to be recommended, as it is rather courting failure from staining and degradation of the whites. Generally speaking, when the print is removed from the frame

it should be about a third of the depth necessary ; then there will be no danger of stains occurring during development. The rapidity of development is regulated by the amount of free silver in the paper, and although the print may be placed at once in the developing bath, I find that more control is obtained by rinsing the print in one or two changes of water to remove some portion of the silver. The prints require to be well washed after development.

The range of color that can be obtained with plain paper prints should gratify the most exacting, as it extends from bright red on the one hand to a perfect black on the other, and between these two extremes an infinite variety of color is obtainable. The number of toning baths that may be used is very large, and comprises practically every toning formula published for albumenized papers, and some designed for other processes. Those toning formulæ generally used in albumenized printing give browns, purple-browns and purple-blacks without any difficulty, but I am inclined to think that these colors do not suit the ideal plain paper print. Some good brown, brown-black, or pure black gives the most pleasing result. To obtain these colors no bath equals the well-known platinum toning bath as formulated by Clarke and Burton. I repeat Burton's formula here for the sake of completeness :

Chloro-platinite of potassium, 60 grains ; sodium chloride, 1 ounce ; citric acid, 150 grains ; water, 120 ounces.

Burton advises that the prints be placed in this toning bath without any washing away of the free silver ; for my own part I much prefer to have the free silver entirely removed, as the toning is under better control, and the bath keeps in condition longer. Toning action is very rapid, and when warm, brown colors are wanted care must be taken to remove the prints when quite red, as the color darkens considerably on drying.

If a pure black color is wanted it must be obtained with a different formula, and the print requires to be of excessive depth to compensate for the subsequent bleaching. The formula I have found give the best black is as follows : Chloro-platinite of potassium, 2 grains ; nitric acid, 2 minims ; water, 1 ounce.

This is applied to the surface of the print with a camel's-hair brush, and the action continued until the image is perfectly

black when looked at by transmitted light. With very rough surfaced papers a solution even stronger in the platinum salt may be used with advantage. Owing to the acid, that is a necessary constituent of platinum toning baths, it is desirable to place the prints in an alkaline bath between toning and fixing, otherwise sulphur may be deposited in them. A weak bath of sodium carbonate answers this purpose.

This, in brief, is the process of plain-paper printing, a process at once simple and beautiful as photographic processes go. Unfortunately for its popularity, one cannot do with it as a London Salon exhibitor claimed could be done with "oil"—commence the print as a portrait study, and if it were not satisfactory turn it into a landscape, but at least its results can be rendered sufficiently artistic to satisfy the average worker.



A COUNTRY ROAD.

THEO. EITEL.



CROSSING A
RIVER IN BORNEO.

H. M. LOMAS, F.R.G.S.

PHOTOGRAPHY FOR THE EXPLORER AND SPORTSMAN

By H. M. LOMAS, F.R.G.S.

TO know the Orient means that one will never again be safe—at any moment the “Call of the East” may come to one, and civilization’s charms will pall. To prowling among another people, to learn their ways and try to think their thoughts, and with one’s camera attempt to get studies that give the spirit of the country, is a fascinating occupation. By the aid of those photographs that one has taken, one can live the life of the wilds over again in imagination.

Tropical work has its difficulties, and they are many. One is the heaviness of the midday shadows, illumined by no reflected light from white clouds, for the sky is like an inverted bowl of burning brass, which seems only to give heat. Morning and evening light, therefore, often give the softest pictures, un-



CROWD OF FRIENDLY MURUTS,
INTERIOR OF BRITISH NORTH
BORNEO.

H. M. LOMAS, F.R.G.S.

less one carefully composes the heavy masses of shade and patches of glaring light, so that they tell their tale—a tale of the glorious heat of the tropics. In this case, by giving slight over-exposure, one may reduce the contrasts until they can be rendered on white paper. A light stand is useful for snapshot work, for to get the before-mentioned result, a full exposure of, say, half a second with F. 8 (U. S. 4) is often advisable for near subjects—too long a time to hold a camera steady.

All the world over, it is the same; if you can make friends with the children, the parents will make friends with you. But this cannot be done among some people. For instance, in Central Borneo, where it has been my happy lot to prowl on two

occasions, the children are terrified at the hideous white man, and bolt. Here one has to rely on going about quietly, making friends with the old chiefs, not aiming the camera at the people, as if to work some deadly charm upon them; but casually strolling toward the group of figures that one wants, one pretends to be absorbed in watching quite another scene; then as the unsuspecting models pose naturally and characteristically, one can secure the desired picture. A peep into the viewfinder fills the heart of the most warlike of chiefs with delight.



LASSOING A
WILD STAG.

H. M. LOMAS.

As to precautions in tropical work: Apparatus must be kept dry, which is best effected by keeping everything in tin cases with well-fitting lids. Some people have their supply of plates soldered up in tin, but this is troublesome, for such cases are difficult to open, and cannot be closed again. The best way is to pack plates in tin boxes with slip-on lids, putting a piece of rubber plaster or waterproof tape round the join.

Dry the cameras occasionally in the midday heat, first removing the lenses, for the sun's rays will do the glasses no good; and be sure that all things are dry before they are put into their tin cases. A developing tank and rodinal developer

are very useful. Rodinal does not deteriorate by being kept in a hot climate—at least, this is my experience. Use a good dose of bromide of potassium with the developer, and an alum bath before fixing the negatives, and finally dry them in a draught *quickly*—for the gelatine is apt to spot and pit as if putrefying, if left in still hot air. Bromide paper stands the tropics if kept in a tin box, and is useful for making quick proofs. Some calcium chloride may be taken with one for drying, or keeping things (such as papers, etc.) dry.



STAGHOUND MEET
AT DUNSTER, ENGLAND.

H. M. LOMAS.

Seascapes need *very* short exposure with a small stop, while scenes in jungle and forest need a far longer exposure than one at first would suppose.

Remember, when you are in a so-called "savage" country that, after all, those "savages" have first right: you are, as it were, their guest, and must therefore treat them with due politeness and respect their feelings. Many troubles would have been avoided if all travelers had remembered this.

Sporting photography comes next to shooting in point of fascination, and the trophy you secure with the camera—a picture of your game—is as well worth getting as is dead

game brought down by the rifle. For this work, a small light camera is necessary with a very fast shutter, and a lens working at large aperture. Telephotography is a branch of sporting work upon which we cannot enter here. For hunting scenes where one rides, as in fox, hare and stag hunting in England, one has to carry the camera on horseback, either slung over one's shoulder, and so lying flat under the arm, or else attached to one's saddle. The great thing is to carry the camera in such a position that it gets the least amount of shaking, while at the same time it must be easy to reach it. It is usually better to dismount before taking a picture, and, if possible, get a friend to hold one's horse. A great deal depends upon one's "mount"; he must be good-mannered, fast (because time lost in photographing must be made up) and not restive when standing—in other words, you need a perfect horse! To be keen on your sport is really the secret of sporting photography.

Many are the failures one has in both the above branches of photography, but the successful photographs give one pictures worth all the trouble and make up for the disappointments. The greater the difficulties one has to overcome, the more one prizes one's successful pictures and "*experientia docet*."



AT THE CLOSE OF DAY.

E. A. BRAY.



A BASKET OF FLOWERS.

J. F. WILDE.



YACHTING DOCK.

EDGAR A. COHEN.

THE HAND CAMERA IN THE LUNCH HOUR

By C. C. WHITENACK.

IN looking over the collection of prints brought home by travelers, one cannot help expressing the opinion that everyday life in American cities furnishes just as many picture opportunities as can be found in the average European town. To be sure, we have not so many magnificent cathedrals, nor have we such a profusion of historical monuments worthy of a plate or film. But in every one of our larger cities life is abundantly varied and has its picturesque side if only we will look for it. The trouble is that when we go abroad to photograph the camera is always with us; too often when we are at home the camera is held in reserve for special occasions, and we miss many opportunities to record scenes of interest or pictorial beauty.



NORMAN ARCH
ALNWICK CASTLE, ENGLAND.

JOHN BEERY.

My plea is for the use of the camera during the lunch hour—regarding this brief interval of recreation as simply a daily opportunity for camera practice. We are all familiar with the odd bits of life and character and the continual changing and often picturesque aspects of our city streets. This familiarity should enable us to reach any desired locality quickly and to make the most of the picture opportunity it presents with the minimum expenditure of time and trouble. Especially during the summer months, when the light is abundant, a great deal of this kind of work might be done with profit and pleasure. There can be no doubt about it but that camera practice of this sort, obtained during the lunch hour, as suggested, would help us to solve a great many of the difficulties which perplex us when we attempt serious work away from home, as when



SUBWAY—CITY HALL PARK,
NEW YORK.

JOS. L. SEILER.

traveling in foreign countries, amid surroundings with which we are unfamiliar.

I need not more than point out the great usefulness of the lunch hour as a means of familiarizing ourselves with the manipulation of our apparatus. To take an example—as every reader knows, the average reflex camera is a source of much bewilderment and many failures until we are thoroughly expert in its manipulation and handling. An occasional twenty minutes during the lunch hour spent with the reflex camera, in which experience may or may not actually expose plates, will make results all the more sure when we take the reflex with us on a serious photographic trip.



EVALYN.

JANE REECE.

TONING PLATINUM PRINTS

By JOHN BEEBY.



THOSE who work with platinum paper and seek tones warmer and more agreeable than the normal cold black given by the ordinary black papers will appreciate the rich tones obtained by the following formula, which I have used for some time with great satisfaction. This formula gives prints of a rich chocolate brown to warmer shades simply by leaving the prints in the bath until the desired tone is produced. The tones are not of the ordinary sepia tint, but much richer and deeper. Mix the following solutions:

A. Glacial acetic acid, C. P., 1 dram; uranium nitrate, 10 grains; add distilled water to make the solution up to 5 ounces.

B. Potassium ferricyanide, 10 grains; glacial acetic acid, C. P., 1 dram; add distilled water to make the solution up to 5 ounces.

Mix equal parts of A and B just before using; rock the bath continually while the prints are toning and throw away the used solution after each toning.

The normal black platinum print immersed in the above will begin to change color in about fifteen minutes, ranging from black through the warm browns. The toning can be stopped as soon as the desired color is reached by immersing the toned print in water made slightly acid (by the addition of a little glacial acetic acid) for fifteen minutes, after which the prints should be rinsed and dried.

Prints toned with this formula have been found to be practically permanent, a set of test prints exposed under varying conditions for many months showing no sign of change whatever.



PORTRAIT.

CURTIS BELL.

SHUTTERS

By E. G. BOON.



RUNNING through some hundreds of hand camera exposures that had been made over a series of years I was much struck by their varying quality in regard to the form of shutter used in making the exposure. There could be no question that those negatives which were made with focal-plane shutters were in average quality quite in advance of those made with other types of shutters. Some of them had been made with earlier forms of the focal plane, others with later and improved patterns, but in all these there was observable a more even and uniform exposure, an absence of unevenness and in every way a more satisfactory result—as far as exposure influences the negative.

Most of the negatives were made with comparatively slow plates, the exposure average being $1/30$ of a second. I remember well how the early shutters “kinked” at these slow speeds, and with what anxiety I developed the plates; but invariably the result was agreeably disappointing.

Next to the focal plane, the roller blind shutter working behind the lens seems to have given the best results and for speeds of $1/15$ to $1/20$ of a second this type of shutter seems to be most desirable.

Most of my negatives were made in Italy with bright sunshine and it is interesting to know that working with the lens at $f/11$ or $f/8$ and using plates of about H and D 300 speed, my average exposure was $1/30$ of a second.

This is simply a little note from my experience, but it may prove useful to some of my fellow-workers.



SPRING.

F. J. Bruguere.



THE NIGHT COMETH.

JOHN M. WHITEHEAD.



THE TOWER OF AMBASSADORS
WHERE ISABELLA RECEIVED
COLUMBUS—ALHAMBRA.

R. E. M. BAIN.

THE PICTURESQUE IN SPAIN

By ROBERT E. M. BAIN.

BEGINNING with Biarritz on the north and closing with Algeciras on the south, Spain presents subjects for the camera which are unique and exclusive. Not only old Spain, of the time of the Moors, but the more modern features possess picturesqueness of a quality not found elsewhere. The people are hospitable and entertaining and the tourist feels quite as much at home as in other and more familiar portions of the Continent. The noteworthy objects which attract the camerist are the Cathedral of Burgos, the great Escorial, Madrid's palace and boulevards, the Puerto del Sol; and south, the marvelous enchantment of Toledo will provide several days of entertainment. The streets and great Mosque of



WASHINGTON IRVING'S
QUARTERS—ALHAMBRA

R. E. M. BAIN.

Cordova soon depletes one's stock of films if free rein is given the inclination to copy all that is interesting. Then the journey to and through Andalusia and the visit to the Gardens of Seville and the great fortress of the Alhambra is more like a dream than a reality. We found the Spaniard agreeable,



CLOISTERS—CATHEDRAL AT
TOLEDO, SPAIN.

R. E. M. BAIN.

and the incidents of the late unpleasantness were apparently forgotten. "Gay Seville" offers the most attractive street views of Spanish life, and the congregation in the great square of San Fernando at night introduces one to the inner life of the people of all classes as they meet their friends and chat between the performances of the military band which renders Spanish music as only Spanish musicians can render it. The street scenes, markets and barracks offer unlimited scope to kodakers, not to mention the attractiveness



SUNRISE OVER GIBRALTAR.

R. E. M. BAIN.

of the great Alcazar and the cathedral with its Giralda tower and orangery. The journey from Seville to Granada opens up opportunities for rural photography which are unsurpassed, and the climax of romance is at hand when one enters the park leading to the Alhambra, where the purling streams of water never cease flowing beside the paths and the great trees forever shade the walks. No place is more romantic or beautiful than this, and it is the supreme opportunity for the camerist. The attendants placed in charge by the Government are very lenient to those who make pictures, and their explanations (in Spanish) are quite enlightening. The sur-



FAITH OF THE PROSPECTOR.

D. H. Brookins.

2011

roundings of Granada are also full of quaint beauty, especially the gipsy camps on the Albaicin opposite the Alhambra. The journey from Granada to Algeciras and Bobadilla is for most part through the mountains along rushing torrents and under great cliffs a hundred feet high or more and is a day full of interest. In addition to the picturesque mountains the great forests of cork trees lend additional charm to the journey. At Algeciras the beautiful hotel belonging to the railway company housed us amid surroundings not unlike our southern California coast, save that three miles away lay the great British stronghold—Gibraltar—like a recumbent lion. With its top bathed in fleecy white clouds it made a most attractive picture, apart from its historical interest. All too soon our steamer arrived from America and carried us away to the shores of Italy. Spain is a dream, and it is to be hoped that it may remain in its present picturesque state for many years to come—not overrun with globe trotters.



TOILERS OF THE SEA.

CHAS. E. WANLESS.



THE GOLD FISH.

MATHILDE WEIL.

GROUPS AND GENRE SUBJECTS

Compiled by J. W. LITTLE.



ON the editor's assurance that the "Hints on Portraiture," published in last year's Annual, have been widely appreciated, I have compiled a few hints on photographing groups and genre subjects for the present volume. As with the former compilation, it is inevitable that these notes, gathered from many sources, may seem somewhat disjointed and lacking



HIS SUMMER GIRL.

T. W. KILMER.

in orderly arrangement, but it may be that the help they offer will sufficiently atone for this defect.

Where two figures are posed together, the light one should generally be placed in front or slightly forward to give it more prominence. This, however, is not to be taken as an absolute rule, as the object of most importance should be placed in the position of chief interest regardless of the character of the dress or drapery of the subject. If one of the subjects or persons in the group expresses action, as will happen in genre pictures, the other figure remaining passive, the former may be given greater prominence.

The number of figures, the color of the draperies, and so on, should all be considered and the composition worked out be-

fore any attempt is made at the actual posing or placing of the figures. Where it is possible a sketch of the proposed composition should be made beforehand as better assuring a pleasing arrangement.

The general principle that those persons with light colored clothing should be placed near the center, and those with darker clothing arranged on either side, may not apply where it is desired to give equal prominence to each member of the group. In this case the lights and darks should be grouped together so as to present a harmonious balance in tones. Very seldom should a group be so arranged so that those wearing light clothing are placed on either side and those wearing dark clothing are in the center.

The figures most distant from the principal figure in the group should exhibit less interest. When two figures are so placed that their arms cross, the formation of right or acute angles should be avoided or concealed if possible. Where there are two figures in a portrait the darker face should usually be placed in the stronger light, although this will be influenced by the character of the clothing worn by the subject.

A satisfactory composition is to have the principal heads show one mode of arrangement, the general appearance of the group a second, and the background a third, by which means simplicity with variety is secured.

A good way to arrange a group composition is to put one figure into the group at a time as though arranging a bouquet of flowers. Each figure should be well posed as an individual, so that all the others could be taken away and the single figure would please the eye alone. If the members of the group happen to be fairly equal in height they should be so placed as to give variety in this detail, which can be secured by the use of stools or chairs of different heights, and so on. In groups or genre arrangements it is well to place taller persons behind so as to avoid reversed perspective. In groups of three figures, where one seems naturally opposed to the other two in character the two may usually overlap and be considered as one mass in composition.

To avoid a spotty appearance in large groups made up of many figures the lights may be gathered together, and will be less noticeable if a separate mass of light can be introduced



QUEEN PHILLIPA AND DAUGHTER.
[English Church Pageant, 1909.]

WILLIAM GILL.

such as a portion of sky or building. For indoor groups there can be a broad mass of light on the wall or floor or by the inclusion of a window. As a rule backgrounds in group work should be kept very simple, sufficient variety being secured in the arrangement of the group.

In groups of persons sitting on the ground, the lower limbs of the outside figures may be so arranged as to bring down the sides of the triangle and thus avoid monotony by having all in the same position, but both sides should not be exactly alike. In a pyramidal composition, the angles of the pyramid should not be equal and the line in front should not be straight. In other words, the formation of a perfect geometrical figure should always be avoided. In compositions where the pyramidal form is used, care should always be taken to introduce sufficient variety in the shapes and heights of the pyramids to prevent the geometrical arrangement being too obvious. Large pyramids should usually be composed of smaller pyramids overlapping. If one figure in a group is separated in thought or action from the others its line should also be independent. Small groups compose better than large ones. In a group of two or three, with black and white draperies in juxtaposition, an opposing figure in gray or neutral tone will help in producing a harmonious combination.

Parallelism is objectionable in groups, but some exceptions must be made to vertical and horizontal lines, which often have considerable significance and add to the stability or support of the design.

The chief figure in a group should usually be at or near the edge and facing the group, so as to divide the group equally, and so that all the figures in the group may be within a certain distance of the center of interest, providing the action is still proceeding. If the person at the center of interest faces one side of the group, those on the other side should show less interest.

If in a group the line of heads is not sufficient to gather in the converging lines of the figure, this may be accomplished by skillful use of accessories. The gathering line may or may not be curved, but care should be taken to see that it leads the eye back to some leading part of the design and not out of it. Draperies, tree branches or lines in the background may be



MARGARET L. BODINE.

BILLY.

made useful in this. It is not an easy matter to secure good likenesses in groups, therefore, when it is necessary or desirable to show good portraits of all in the group, it is better to simply endeavor to record the fact that a certain number of people met together, sacrificing character portraiture and making simply a record.

In a group of two the importance of principality cannot be insisted upon, the main point being that the lines of the two figures should combine harmoniously and produce pleasing light and shade effects.

In a scattered composition of figures outdoors, there should be one or two figures or smaller groups in the foreground, detached from or loosely attached to the rest of the arrangement. Where concentration is wanted in the character of the figure or figures there should be few accessories and the background should attract little attention; but where there is no person of special interest in the group more attention may be given to the accessories and general effect.

When taking groups under a porch and the light is strong, place the figures well to the front. The interior of the porch will be much better lighted in a subdued light when the sun is not shining; or, still better, late in the afternoon or under a sky of white clouds. Give a full exposure and do not develop the plate too long.

If the group in hand is made up of a man and woman and one is seated, let it generally be the woman. There are exceptions, such as when we have to deal with a very tall man and an undersized woman, or a stout woman and an unusually slender man.

Any one of the figures in a group may be emphasized by isolation, by contrast with the background, or by position, i. e., by placing the figure in a relatively stronger position in the picture space, by bringing the figure nearer the camera or by giving the figure vigorous illumination. Any two or more of these devices may be combined or modified.

The figures in a group should not show divided interest; i. e., they should not look in all directions or wholly out of the picture, so that the composition will not hang together. In a group of two the figures should not be separately engaged nor looking in opposite directions. The central figure of a group



THE ROAR OF THE OCEAN.

Mrs. W. W. Pearce.



SAXON LADY. [English Church Pageant, 1909.]

WILLIAM GILL.

may have the head turned one way and the body in another way to produce balance. Greater license may be taken in the balance of a single figure than with many.

Light, as an element in the composition of two figures, is stronger than place or position. White hats, baskets, etc., in outdoor pictures should be carefully handled; otherwise they are apt to be distracting, especially if they reflect the strong light without showing detail.

In outdoor groups, tree trunks or branches should not be permitted to appear to be growing out of the heads or shoulders of persons in the group. When working at the seashore the horizon should not be so placed as to cut off the heads or upper portions of the figures. Usually a turn this way or that will avoid these distracting elements.

Sometimes in photographing outdoor groups a good background may be obtained by placing the figure against a mass of foliage, with little penetration by the sun or with one or two spaces at the side. If too much light gets through the result will be spotty. The background must not be hemmed in, however, but must leave room for exit and, of course, the background itself should not present any feature liable to distract the eye. Be careful to see that both back and front figures are well in focus. This may be accomplished by the use of a small stop, or by placing the figures so that they all come in the same plane. If the lens used has a round field, it is generally advised to place the figures in a semicircle, although this will have a tendency to make the end figures look relatively larger than those in the center of the group. In the use of flat field lenses, such as the modern anastigmat, this difficulty is not encountered.

When the sky is obscured by dark clouds, or the light is very subdued, the figures of the group may be outlined against it, but outdoor groups should not be taken against a bright sky.

In groups or genre there should, if possible, be a sequence of action following naturally from one to another through the composition.

In the treatment of crowds, a good plan is to get them arranged into a principal or one or more auxiliary masses. If this cannot be done, try to mass the crowd in wedge form, as seen in perspective, the wide end of the wedge at one end of



A FRANCONIAN SHEPHERD.

J. W. NICHOLSON.



DIAGNOSIS.

H. B. CONYERS.

the picture. The leader, as the commander of an army, or the shepherd of a flock, may stand ahead or slightly apart from the rest, or there may be two or more figures engaged in some minor action in front of the general mass of figures, which will then serve collectively as a background to the smaller group of chief interest.

In figure studies, where the interest is all in the picture itself, the lines should not conduct the eye away from it. If the interest is outside of the picture, as may be the case in a genre subject, the lines and the eyes of any figures in the genre should lead the eye of the observer toward the point of chief interest.

A figure may be given height, dignity and a commanding appearance by making it almost completely fill or dominate the



VENETIAN CANAL.

Eleanor W. Willard.





THE CHRISTMAS DOLL.

JEAN M. HUTCHINSON.

picture space. An exalted personage may be of so great importance as to demand the introduction of considerable space around the figure, even though the figure itself be small. To take a low position in photographing a figure seems to elevate the figure, giving it dignity and importance.

In genre groups one or two figures may with advantage have their backs toward the camera. Where there are two groups in the one composition, one should be dominant and the two should be connected in some way by a line. Where action is expressed in the accessories of a picture, as when figures are connected with a gathering storm, the figures should be hurrying anxiously forward to comport with the general feeling of confusion and danger imminent. The central motive in a genre subject, to which everything is subordinated, should not be the

figures, but some abstract quality, such as the lighting of the scene or the expression in the faces of the figures, etc.

In trimming genre or other figure pictures, always leave a larger proportion of space in front than behind the figures. A genre picture should usually have less definition than a portrait. Emphasis may be obtained by arranging the principal figure within a circle or square or other well-defined space, as by utilizing the frame of a door or window. When the subject is placed among objects of intimate association, the formality of the pose may be somewhat neglected, but the sur-



PREPARING FOR WINTER.

JOHN J. REILLY.

roundings should not detract from the subject too strongly. Contrast is one of the most effective means of accentuation, as when we oppose old age and childhood in a composition.

In genre pictures, or when portraying objects with movement, it is often better to use a hand camera than to attempt the deliberate pose of the subjects for a stand camera. This applies to such objects as a man plowing and so on.

In taking pictures including figures it is sometimes a good ruse to feign at the moment of exposure that something has

been forgotten, so that the figure will resume its normal appearance, when the exposure is made.

In photographing a restless subject it is a good plan to get someone else to pose while arranging the accessories so as not to tire the subject.

Sharpness is more tolerable in genre or portraits where there is little movement or action ; in a picture showing much action



THE PIPING GIRL.

KATE SMITH.

there should be less detail, as it would be impossible in nature for anyone to observe it.

In such subjects as a man walking, the exposure should be made at the beginning or end of the step, to express action. Both feet should touch the ground.

In a picture including figures, the surroundings of the subjects should be harmonious ; i. e., do not take the housemaid in the conservatory, nor the school boy in the drawing-room.

In a picture where we have to deal with one figure bending, stooping, or in any suspended action, the figure should always have room sufficient to stand upright or to complete the movement. Parts of a composition may be traced in imagination, even after they disappear in shadows, as a wheel with spokes, part of which is in half-tone or light.

To avoid spottiness in still life pictures arrange the different colored objects together, so that when photographed their values will not conflict.




A KENTUCKY BELLE.

KATE MATTHEWS.

MORE ABOUT LANTERN SLIDES

By RICHARD TROTTER JEFFCOTT.

Y contribution to the 1909 Annual under a similar title brought out a number of letters and inquiries from all parts of the country. It is the opinion of the editor and the writer that a further description and perhaps a showing of a more complete apparatus, together with new ideas covering the subject, will not be amiss.

With reference to the illustrations on page 235 of the 1909 Annual several changes may be noted—tending to bring the simple apparatus up to a high point of efficiency, and to replace the old parts that had been used for a number of years.

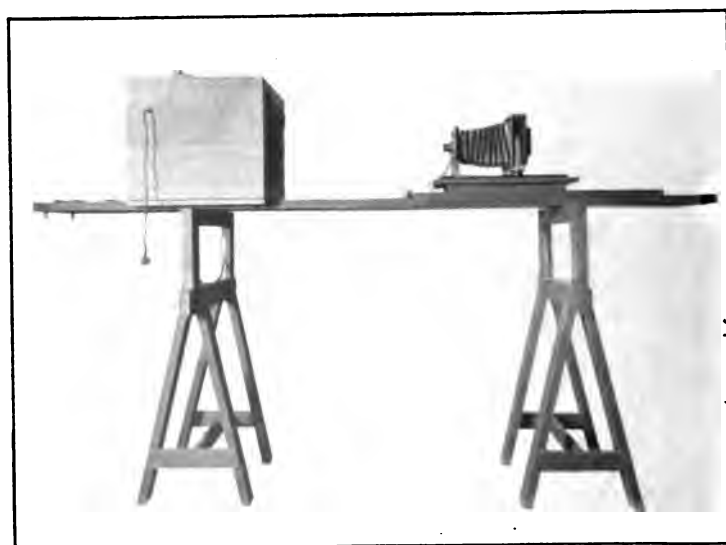
From the former apparatus, the camera with lantern slide back and light screen are retained, the balance being entirely new—a short focus anastigmat lens ($5\frac{1}{2}$ inches) taking the place of the $9\frac{1}{2}$ -inch Goerz lens, the former being found more practical and better adapted for the work.

Inasmuch as the new apparatus is used for the double purpose of making lantern slides, reduced and enlarged negatives and copying, using interchangeably a larger camera, and further being employed daily in the studio, the changes mentioned will be apparent. Selecting a piece of well seasoned white pine ($1\frac{1}{2}$ inches x 12 inches x 9 feet) for the running board, two $\frac{3}{8}$ -inch dowels were arranged on the under side at one end to engage in an adjustable 2 inch x 3-inch piece fitted to a north window. Two other sets of dowels were placed in convenient positions to anchor to the trestles, keeping the running board in a safe position and entirely rigid.

The new trestles are of practically similar dimensions to the old ones, with the exception of the height, now being $47\frac{1}{2}$ inches from the floor. So as to avoid a greater spread on the floor, a frame of 2 inches x 3-inch pieces well braced was built



View of Lantern Slide Apparatus for Daylight Work.

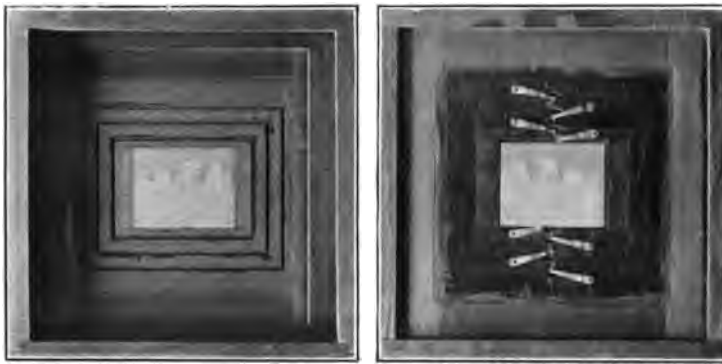


View of Lantern Slide Apparatus Utilizing Electric Light Box.

on the trestles for overcoming any clumsy proportions. The trestles and new portions were made of selected chestnut and the entire apparatus stained dead black.

On the top of the running board, $22\frac{1}{2}$ inches back from the screen end, were placed two guides (2 inches x $\frac{7}{8}$ inch x 39 inches) to control the movement of the cradle; these were each held in place by three $\frac{3}{8}$ -inch dowels for ready removal if necessary.

The new cradle was of similar construction to the old one, except being a trifle lower in height and having the brass frame or guides for holding the camera in proper alignment.



Inside View. NEGATIVE HOLDER. Outside View.

The negative holder was in design a decided departure from the old one, which was, as previously mentioned, of a temporary nature.

Removing from the front of an Anthony copying camera the adjustable nest of kits, these were framed into a holder the outside measurements being 16 inches x 16 inches x 3 inches. As the new holder was perfectly accurate and square, it was readily adjustable to hold the negative in the desired position without altering the adjustable lantern slide back.

The nested kits were rabbeted $\frac{1}{4}$ inch; these I reduced to $\frac{1}{8}$ inch, so as to employ as much of the negative as possible in making the slide. The spring clips furnished on the kits held the negative in a positive position and further adjustment of the horizontal and vertical lines was controlled by the adjustment of the lantern slide back.

The foregoing description applies particularly to the making of slides by reduction, utilizing daylight for the exposures.

Owing to poor light in the winter months and the opportunity afforded for making slides during the evenings, the following description of an apparatus enabling one to work with artificial light will perhaps prove interesting. But little change must be made in the daylight apparatus to accommodate this additional features:

Owing to the permanent character of the two sets of guides for the light screen and negative holder, all distances must be figured from the inner guide line, 17 inches from the window end of the running board. This further necessitated the moving of the cradle guides back about their own length and the boring of holes for the dowel pins.

The light box was constructed in the strongest possible manner, and made absolutely light tight for satisfactory work.

Made of selected white pine, the front and ends are of $1\frac{1}{2}$ -inch stuff; the two sides, top and bottom of 1-inch material; the outside measurements are 17 inches wide, 19 inches high and 22 inches long.

For the purpose of securing exact alignment, which is absolutely necessary, the box slides on the running board, and is kept secure by two strips 2 inches x $\frac{7}{8}$ inch x 22 inches, securely screwed to the bottom lengthwise.

It being understood that the lightbox is also used for making enlargements, the nature of its construction must be considered.

The opening in front measures $12\frac{1}{2}$ inches x $14\frac{1}{2}$ inches, accommodating either the 8 x 10 enlarging camera or the special frame of kits for holding the negatives for making the slides; as these kits can be removed from the other holder no additional expense is added.

The frame holding the kits is built up about 1 inch and the ground glass is placed at the extreme inner side sufficiently removed to avoid the ground glass grain. The top of the box is loose, being laid on a 1-inch frame (providing a light trap) this being necessary for easy removal; two iron handles and cross cleats are fitted. Just over the center of the lamp compartment, a ventilator $2\frac{1}{2}$ inches x 3 inches x 8 inches is constructed to carry off any heat and as an extra precaution against

overheating the condensers. Particular attention must be given the ventilator so as to cause a good air current and cut off all white light.

Suspended from a sliding support is a 100-watt tungsten lamp, this being of sufficient size to produce a good volume of light for both enlarging and slide making. The sliding support measures 3 inches wide and has a movement of about 11 inches for the purpose of illumination.

The frame for holding the condensers must be accurate and of the best seasoned material. Second-hand condensers of 10-inch diameter may be picked up occasionally at a reduced figure; it is best, however, to have them mounted in a metal collar.

Procure two pieces of poplar 15 inches x 17½ inches, placing cross braces on the inner sides of each two ends. Cut in each circular openings 5/16 inch less in diameter than the condensing lenses. Now recess the inner edges of the openings ¼ inch for the purpose of holding the condensers evenly, and in a true plane. Four ¼-inch bolts are arranged to hold the whole in position, these being placed about 1 inch outside the circular openings. Additional bolts were supplied holding the four corners in a true plane; between the framing four ⅝-inch dowels were secured, the rods passing through the same and forming handles for the purpose of carrying or adjusting the condensers in position. It must be added that the poplar facings were cut so as to have the grain running in opposite directions; this to avoid warping. As an additional means of making the box light tight 1½-inch corner blocks were run from top to bottom of the box.

Several weeks after the box was in use (allowance being made for all shrinkage) the outside was routed and strips ¼ inch x 1 inch were inset, then glued and nailed in place. The whole outfit was portable, the electric wiring from outlet being connected with the box by a theater plug, and an additional switch was conveniently placed.

With further reference to lantern slide plates I have had considerable opportunity to test various brands, but have not altered my opinion in regard to the "Hammer Slide Plates," which I have found at all times to give uniform and brilliant results. Regarding the developing formula, but a slight change

is suggested, and that the addition of 320 grains of sulphite. The Hammer people have recently placed on the market high-grade sulphite and carbonate. Their sodas are to be highly recommended as to purity and ready solubility in water.

In making slides, either for pleasure or profit, it is necessary that attention be paid to all the little points leaning toward permanency and successful manipulation.

For instance, during the warm weather, when the temperature of the wash water is high, care should be exercised to develop with a solution of 60 deg. to 65 deg. Fahr., then rinse the slide for a moment in ice water and place in a bath to harden, made as follows: Water, 15 ounces; powdered chrome alum, $\frac{1}{2}$ ounce.

Move the slide about in this solution to avoid streaks for a few moments, permitting it to remain in the hardener for two or three minutes. Now fix in acid fixing bath, wash and dry as usual.

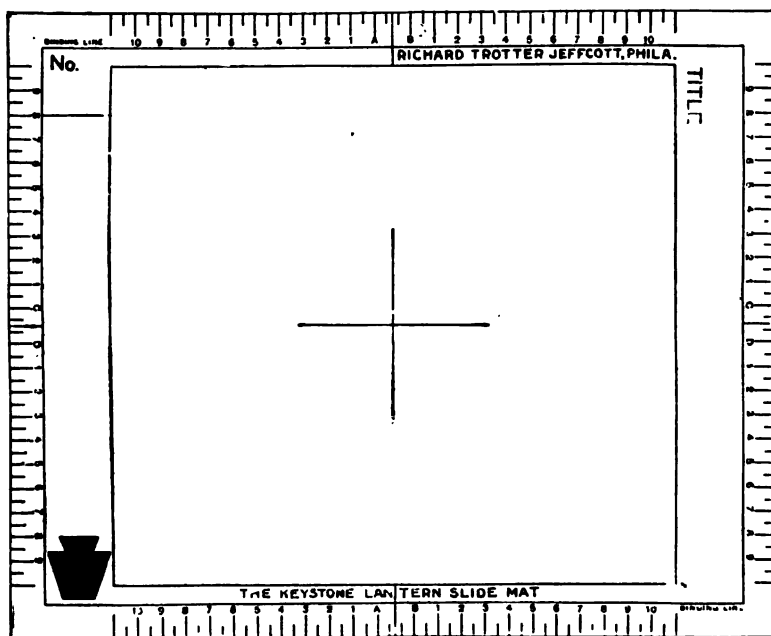
From an economical standpoint spoiled slides make the best grade of cover glass. Dry up your spoiled slides until the accumulation merits a job of itself. Make your film remover as follows: Water, 16 ounces; commercial fluoride of sodium, 60 grains; sulphuric acid C. P., 1 drachm.

Immersion for a few minutes causes the film to readily peel. Rinse the glass in running water, rack to dry and then apply a coating of "Bon Ami" with a pledget of absorbent cotton, and when dry polish with a woolen cloth and dust with a plate brush (kept for this purpose only). Result, a beautiful, clear and brilliant cover glass.

The question of the lantern slide mat has had my serious attention for the past year. The accompanying cut will be readily understood, and a detailed explanation may prove useful. The best quality paper, thoroughly opaque, and having a white face, was selected for the purpose. For convenience the standard slide is $3\frac{1}{4}$ inches x 4 inches, with the largest mat opening $2\frac{3}{4}$ inches x 3 inches. The desired opening is controlled by the maker, taking into consideration the artistic proportion, and the elimination of undesirable features in the original negative. Then again we have the desire to exhibit in our slide all the negative possesses.

The "Keystone Lantern Slide Mat" may be used to cover

either method. It will be noticed the mat possesses several unique and advantageous features not employed in any other mat. First, the "center" is accurately indicated, lines are designated showing the full size of the mat opening, the center being entirely free from confusing lines. Second, along the extreme outside edges, lines and figures are legibly shown, working from each center and indicated from right to left along each side by numbered letters, a-a, b-b, c-c, d-d. Lay



the mat over the slide, indicate with a pencil mark the desired opening on two edges. For example, select for your opening a-7, b-7, c-5, d-5. With a pencil and steel rule connect the top a-7 and b-7 with the lower division. Now with mask knife and rule connect c-5 and d-5, cut between the indicated lines a-7 and b-7, and the top and bottom are ready. Now follow the side indications and the desired opening is obtained. The result is a square cornered opening readily obtained, being perfectly true and accurate. Third, for the purpose of covering up the letter numbers, and for the rapid and accurate binding

of the slide, a "binding line" is indicated. On the upper left-hand side a "number block" is indicated, sufficient room being obtained to give the slide a serial or divisional number, if desired.

The lower left-hand side has a "Keystone" thumb mark for the purpose of holding the slide in the proper position for viewing or adjustment in the lantern. Between the "number block" and "Keystone" a mortise is arranged for the purpose of printing in the owner's name and address. The usual space for "title" will be found on the right-hand side.

If an excuse be necessary for a second appearance under a time-worn title, the reader is reminded that the writer's wish and only thought is to promote a greater interest in slide making.



A CORNER OF THE TRANSEPT
PETERBORO CATHEDRAL. R. S. BRUCE.



CANYON OF THE GRAND RIVER.

GEORGE L. BEAM.



ROSES.

A. W. H. WESTON.

POINTS IN OUTDOOR PORTRAITURE

By A. W. H. WESTON.

OUT of doors we return in a sense to those conditions which the early portraitists shirked, and which made them build houses of glass—called studios—wherein to portray their sitters. Yet we find so much in these natural conditions that adds to the naturalness of the subject that we are often repaid in striving to overcome those difficulties that undoubtedly do exist in outdoor portraiture.

The light is the chief of these difficulties, and because of its abundance seems hopelessly out of control. Yet even the sun, which we are often forced to lament as another difficulty in out-of-door lighting, may aid us in giving contrast and modeling to the features we wish to portray. Only the sun must not be

high in the heavens, but striking the subject gently at an angle of not more than 45 degrees. Thus we should choose the evening or early morning when we wish to enlist the sun as our helper and not a hindrance to our work.

Another method of gaining contrast in our lighting is to choose a spot close to some high bushes or a tree that will throw a gentle shade on one side of the face. Even when the sun is not shining there is always a certain direction from which the light proceeds, and this, if properly taken into account, will add to the effect. Seldom should this source of light be behind the head, but generally at one side, between the camera and the sitter.

The natural backgrounds out of doors may either be good or very bad; not that the possibilities are small, but rather because the scope of selection is so great.

To avoid spottiness, if we can, should be our aim, and leafy trees with the sun or some strong light shining on them are disappointing unless placed at such a distance behind the sitter as to be out of focus. Preferably such background should be in shadow.

The long slope of a hill stretching away behind and above the sitter is very good indeed, or even a white background clear against the sky.

As to the possibility of pose in outdoor portraiture, I think they are greater than the studio can offer; among the flowers and the many pleasant associations of outdoor life we find much that will give a touch of the natural to our portraits.

What scope, too, for child portraiture when the surroundings, are after the child's own heart, and in such good light as to make instantaneous work really possible, giving us the opportunity to seize the best of all the little sitter's fleeting moods.

Who shall say then that in this wide field of outdoor portraiture the possibilities are not greater than the difficulties to be contended? The contest is worthy of our steel.



PORTRAIT GROUP.

S. H. LIFSHEY.



PEACE.

Edgar A. Cohen.

1000



PALEOLITHIC FLINT
AXE-HEAD.

W. J. FARTHING.

PHOTOGRAPHIC "MIGHT-HAVE-BEENS"

By W. J. FARTHING.

IN these days of everything made easy, pictorial photography becomes so tempting a pursuit to the average amateur that the utility of the camera in scientific work is apt to be overlooked, and so the opportunity too often is lost of securing records which might be of infinite use to the student, even when obtained at the hands of a casual observer. Never was this fact brought so forcibly to my mind as when, years ago, chance and the pleasures of a shooting and fishing trip in the far Hebrides landed me in the very spot on the Old Red Sandstone, where that indefatigable pioneer of the lost continent, Hugh Miller, found his famous *Asterolepis*. The shattered fragments of those pirates of the paleozoic sea, the Ga-

noids, lay all around, the tap of a rusty boat bolt, in lieu of geologic hammer, bringing to the sunlight of to-day, here and there, the enamelled sheen of their armor plate, the exquisitely figured damascene of many a fair cuirass. Dipterus, Osteolepis, Pterichthys—all were there, whilst a subsequent visit with an iron crowbar laid bare a slab in which were piled their remains in all the contorted catastrophe of a sudden and violent end. A very hecatomb of ichthyic sacrifice, yet but a mere yard-square fragment of that mighty "platform of death," the rippled floor of the old Orcadian lake. Alas! the camera rested some 300 miles away, and the opportunity was lost.



GLACIAL ACTION ON
THE PRIMARY ROCKS.

W. J. FARTHING

A few days after the trout rod was laid aside on the shores of Stennis, one of these curious tumuli, or earth dwellings, sometimes one, sometimes the other, of which there are so many scattered 'round the loch, was in process of being explored. It was not difficult to reconstruct the prehistoric tragedy of that humble dwelling. The night attack, probably at the hands of a neighboring family or tribe, the indications all around of ruthless slaughter of the unfortunate inmates, even to the fall, stricken in death, across the scattered ashes of a smoldering fire.

The "Ring of Brogar" and the "Standing Stones of Sten-

nis," those miniature Stonehenges, amongst many, whose origin is lost in the silence of an unknown past were close at hand; known to local tradition yet, the one as the temple of the Sun, the other as dedicated to the Moon, and surely of far earlier date than when the Norseman filled the land with rapine and murder, and utilized both for his later pagan rites. So late as the middle of the eighteenth century it is said that these two circles were accounted holy ground, and were the scene of many a betrothal on the first day of the New Year. The



NEOLITHIC FLINT IMPLEMENTS,
ARROW-HEADS, SCRAPERS, ETC.,
FROM THE IRISH PEAT BEDS

W. J. FARTHING.

happy pair are said to have gone first to the Standing Stones, where the woman knelt and invoked the aid of Odin to keep her faithful to her lover, and then to the Ring of Brogar, where the man in turn pledged his faith, the ceremony being afterwards ratified by clasping hands through the Stone of Odin.

Maes Howe, perhaps the finest specimen of the Celtic or Pictish round house extant, is here, too, and affords another case in point. Till this mound was opened in 1861 no runic scripts had been found in Orkney, but there they are lining the walls, many of them merely scraps, such as any idle hand might cut to pass a moment away, but others which it is said convey its history fairly well, from at least the comparatively

recent period when the Scandinavian rulers called it "Orkahaug," or the "Mighty Mound," and broke into it in search of treasure. There, as well as runes, were the incised Serpent Knot, and the Dragon of the sea rover—even, too, the Cross of the Redeemer itself—symbols of a heathen and a Christian faith, linking the chain of destiny from out the dark eons to the light of later days.

The Stone of Odin, which once stood nearby with all its reputed virtues, and many cromlechs, have long ago disap-



FLINT AXE HEAD—
IN RIVER DRIFT GRAVEL BED.

. W. J. FARTHING.

peared, victims of the utilitarian vandalism of the Scotch Crofter settlers, who have used them for hearthstone and cowbyre. A photographic record of many of these relics of the past would have been invaluable had it been possible.

The Shetlands lie hardly a hundred miles further north and are equally rich in their store of archeologic interest. Why these wonderful islands, pulsing to the beat of the stern North Atlantic surges through the stormy months of winter, and yet so lovable from May to October, should have been, up to comparatively a few years ago, so little known is a problem; where a coast line of rugged grandeur and a depth of color in its lichen-covered "stacks"—the rainbow hues of its miraculous



AN ARTS AND CRAFTS WORKER.

Helen P. Gatch.



sunsets and the ever-changing tinted sea—now shadow, now smile—must be the despair of the painter, to say nothing of the monochrome man behind the camera. Yet, with such possibilities of really useful photographic work as well as picture-making, it is passing strange that the storm-swept magic of the Orcadies does not tempt men more, even now! But this, by the way: I did not set out to pen a panegyric on Ultima Thule, albeit I myself have seen there that which I shall never see on earth again, except perchance in the night watches of retrospect. En passant: Wherever the Danes fixed a temporary camp in their raids on the British coasts there almost always exist traces of their “round houses.” Skomer Island, off the entrance to Milford Haven, in Pembrokeshire, is full of them, and Penmaenmawr mountain, too, on the Menai Straits, shows them on its upland slopes. Tradition even yet whispers of a fabled long ship lying sunk amongst the rocks somewhere on that western coast, with its battle shields still lining the gunwale. To return to the geologic side of camera work: wherever coast erosion or even quarrying is going on, there is the constant chance of something turning up, and one never knows how soon the last plate in your dark slides, or the last film in your roll holder, may not become all but invaluable. Many years ago the ganger at a limestone quarry in the Midlands came along to tell me that the men had found a “petrified sheep” in the bedrock, and knowing I was “allus after odds and ends for picturing” would I come and look at it? Careful stripping revealed a very fair specimen of a 14-foot long Plesiosaurus, lacking the skull, as usual, but still well worthy of a photograph, in situ, in the Lias. Too bulky to move, as far as I was concerned, I have every reason to believe that it found its way ultimately, as many a rarer fossil does, alas! into the rapacious maw of the Blake’s “crusher” and so into the cement kiln. Again, quite unexpected was the discovery one day, in the same neighborhood, of a small incinerary urn and two hand-querns, in perfect preservation, at the bottom of what the quarrymen took for an “old well.” Fortunately, these finds were carefully preserved, though the camera was not available at the moment to secure a record of how they lay when first uncovered. The typical piece of Glacial Shearing in the primary rocks at Barmouth, an illustration

of which goes with this article, I tumbled over one fine day when working a half-plate camera in that picturesque corner of the Welsh Coast, all unaware until I saw it that such a fine example existed in the neighborhood. The Pleistocene forest bed, which fringes so much of our British west coast line, is clearly visible at low spring tides just below this locality, and bones and antlers of the wanderers which roamed the prehistoric woodlands are still to be found on a careful search, fit subjects always for photographic delineation. To come still later on in the sequence of geologic time—the Paleolithic axehead illustrated is shown as nearly as possible as found in an ancient gravel bed, now but a heap of debris to mend a Welsh country lane with. Curious, indeed, is the reflection that such relics of primal humanity—the products of an age so quaintly described by an unknown pen in the 50s, as when “the What-is-it went into the land of Nod and took him a wife of the Longimanous Gibbous,” from whence “are the generations of primeval man”—should be now at the mercy of a scrap of gelatine and some silver nitrate, after all the weary drift of centuries that no descendant of his can number; but so it is, and surely the opportunity should never be lost. Intensely interesting as are the records of the rocks, they are made much more so when noted by the man who can say, “I saw that and there’s a photograph of it,” even though he hold no chair in the schools, and be but an averagely well-read layman with a certain knack of observation.



A SUNLIT PASTURE.

W. H. ZERBE.

ENLARGED NEGATIVES OR BROMIDE ENLARGEMENTS.

By WM. H. ZERBE.



ANY of our foremost pictorialists have latterly taken to the use of small cameras for serious work, resorting to after-enlargement for their finished pictures. This method has common sense behind it and is wholly praiseworthy, but, of course, it calls for scrupulous care in the making of the finished picture.

To one who, like myself, is privileged to see a large number of original prints from most of the prominent pictorialists in the field to-day, it is somewhat surprising to see how few use the enlarged negative method. Nearly all the large prints I see are obviously direct enlargements on bromide paper from small negatives, and invariably of poor quality compared with prints made from enlarged negatives. At first I questioned whether this was due to the use or abuse of bromide paper, so many of the prints being best characterized as flat, lifeless and muddy. Since, however, the prints I see are by workers who have a national reputation, I am forced to the conclusion that the fault lies in the bromide paper, and is especially traceable to the small latitude offered by this paper, for one is confined to at most two or three grades or surfaces.

The worker who uses the enlarged negative, on the other hand, has an infinite variety of papers to select from, and it must be a poor negative, indeed, from which one cannot get desirable prints in either platinum, gum-bichromate, carbon, oil process, kallitype, plain silver or other papers well known to all serious workers in photography.

With carbon and gum-bichromate papers, for example, the color, texture and surface of the print can be varied in an almost unlimited measure. In platinum we have at least two colors to choose from and a wonderful range of tone effects. Similarly the various modifications of the silver printing



THE BROOK.

W. H. ZERBE.

methods offer generous scope for selection adapted to all sorts of negatives and the expression of any desired subject.

Hence I repeat, with the knowledge that the print from an enlarged negative is almost always superior to the direct enlargement on bromide paper, one wonders why more pictorialists do not use the enlarged negative method. The difference in the tonal qualities secured is evident from any comparison of the two kinds of large prints and will convince the most sceptical.

It must be admitted that the enlarged negative method is a little more troublesome, and when only one or two enlarged prints are required the bromide enlargement is undoubtedly the simpler and quicker method. But when once the enlarged negative is secured, the advantages are all with this method, and the making of superb large pictures is simply a matter of making prints.

If those among my readers who desire to improve the pictorial quality of their work will once take the trouble to see prints from enlarged negatives by such workers as C. F. Clarke, S. S. Skolfield, John Peterson, Theodore Eitel, W. H. Porterfield, I have no doubt but that the enlarged negative method will speedily come into wider popularity. Those who deny themselves this aid to pictorial expression certainly work injustice to themselves and their work.



THE LONG LANE.

H. E. POWELL HIGGINS.

NIGHT PHOTOGRAPHY

By H. POWELL HIGGINS.



AT night," said Whistler, "when the factory chimneys become campanilæ, Nature talks to the artist alone." And this he proved by producing some of the most beautiful inspirations of all time. And his words are true. The harsh blatancy and insistent detail of the noonday summer sun are not for one moment to be compared with the mystery, the glamour, the soft, seductive charm of everything at night, from the hard, white road with its setting of large, undefined trees, to the solitude of the harvest field.

My remarks are going to be heretical. Hitherto, night photography has concerned itself with street lamps, and street lamps alone. Night photographers seem to have revelled merely in the novelty of night work, to have confined their interest in the vices and virtues of green-glass plates, prevention of halation and such like scientific minutiae. This is all well—all as it should be, perhaps, but it has nothing to do

with art, or the artist's appreciation of the most fascinating period of the twenty-four hours. It is simply a cold, calculating, scientific surmounting of technical difficulties. Nor do we want street lamps. Some may be attracted by the wet nights and lamp reflections, by naked lights and posed carriages, but let us hark to the solitude of the plain, the awe of the hills, the mystery of river and road. These are things worthy of one's contemplation and doubly worthy at night when viewed through the open aperture of fancy.

I have another objection. Why take photos at night at all—let us be artists of the night by all means, but why expose plates at night for merely scientific enjoyment? I venture to suggest that this self-imposed necessity has been the cause of all this street lamp trouble. Photographers know they cannot obtain impressions of the countryside at night by night exposures (save by flash lamp which gives an entirely false effect) so they rush to the region of artificial light and give vent to their enthusiasm there.

My suggestion is to expose our daylight plates on daylight subjects, and produce therefrom prints in some plastic medium, in which there is play for our fancy and scope for the reincarnation of our night impressions. I want photographers to study the night and its aspects, to be always jotting down on paper some of its elusive charm. To say that we photographers should carry our cameras into the dark-robed night, because we wish to make night pictures, is just as unreasonable as objecting to Whistler's nocturnes, because they were painted in the day. To deny the truth and beauty of "Battersea Bridge" because Whistler was not on a moored barge all night, while he painted it, will strike most thinking people as puerile and absurd. Yet these same people will frequently declaim a similar modus from a photographic point of view.

I do not wish to intrude the region of photographic politics, but I hold that forbidding or discouraging this process of producing night pictures from "faked" (a sorry word!) daylight exposures is a direct and unconditional concession to that terrible Philistine—the photographic purist. I also hold that it narrows the photographer's scope in a most unwarrantable manner, and this is not as it should be; it does not make for progress. Photography, we claim, is an artistic medium, and



HIS FIRST OVERALLS.

Mrs. W. W. Pearce.

the only way we can justify this claim is to lessen its limitations in every conceivable way.

Thus we can go, quit of bag and tripod, and drink in the beauties of the night. We can watch the harvest moon rise over the rick yard, still and silent after the day's toil; we can stand on the bridge, lean on its parapet and dreamily watch the monlit water whirl its way past barge and bank to the distant dull roaring weir. These are the charms of night. Let us produce our impressions of them in a gum bichromate print from a daylight exposed plate and be happy with the thought that we have seen and recorded—let us hope—a poetic impression of the real night; not a scientific registration of electrical triumphs.




THE BARGE.

H. E. POWELL WIGGINS.

CONVEYING THE SENSE OF MOTION

By WILLIAM FINDLAY.

HOTOGRAPHS that many might consider artistic and which give pleasure to the eye while gazing on them, yet may fail in one particular—they do not convey to the mind the sense of motion that the subject warrants. It is not necessary, of course, to introduce it in a peaceful landscape, and in portraiture it has been the cause of many spoiled plates. But in several branches of photographic art, if the operator fails to expose at a moment when there is some evidence of movement that will be chronicled on the plate, the exposure might as well not have been made, for the result will be, if not a total failure, something approaching it.

This was brought prominently to my mind recently, when perusing an advertisement regarding an express train that would transport me at a reasonable figure and in an incredibly short space of time from a crowded city to where I could "breathe the air of boundless liberty." A photograph of the train illustrated the advertisement, but it might as well have been a picture of a model train in an exhibition. There was no indication that it was moving, nothing to convey to the mind that it was the "flier" the text said it was. Now, had the photographer taken his station at some steep incline on the railroad, a different result would have been secured. In such circumstances the fireman would have had to give his furnace as much coal as it could consume, and the driver would have had to open the throttle to its full extent. The result would have been a cloud of steam and smoke upon which the light would have charmingly played, and there would have been no necessity for asking the question, "Is she moving?" There would have been ample evidence.

One of Robert Demachy's pictures is entitled "Speed." It is a photograph of a motor-car going at a terrific pace, and the impression conveyed to the mind is that the title is appro-



THE RAILROAD DEPOT.

HARRY D. WILLIAR.

priate. How is this accomplished? The slight sense of movement perceptible in the car itself—despite what was evidently a focal plane shutter exposure—certainly tells that it is in motion, and the cloud of dust in its wake verifies the fact in a most striking manner.

Though many people cry out about the dust nuisance created by these cars, photographers ought probably not to join so lustily in the chorus of execration, unless their studio happens to border on a much frequented roadway where there is a chance of the dust settling on plates in the process of drying. Then there might be some cause for complaint. But the pictorialist may find in the alleged nuisance a valuable pictorial accessory; and makers for motor-cars would secure a more striking advertisement for their cars if, instead of posing the vehicle and blocking out all the surroundings, they caused it to be photographed while showing its paces along a picturesque roadway. The reproduction of the photograph would be certain to arrest attention, and the variation of "stock blocks" could be made much more interesting.

A marine photograph, one would think, should have little need of an accessory to denote motion. Waves themselves, or the ripple on the water, if a calm prevails, would be enough to convey to one's mind an abounding sense of motion. If shipping is included in the composition, however, it is necessary to show that it is moving, if such is the case. Otherwise the resulting picture shows an inanimate form. A sailing ship, of course, needs nothing but well-filled sails to verify the fact that she is bounding along, and no prettier picture can be secured. But now seldom one has the chance. I have been on the lookout for a full-rigged sailing ship with all canvas set for these last seven years, and the only opportunity that presented itself was one afternoon quite recently when, unfortunately, my camera was at home.

A steamer, however, is not to be despised as part of a marine composition. But unless smoke is issuing from the funnel or funnels—the more the better—the photographer ought to give a second thought before making the exposure, for if this is not present a somewhat uninteresting picture may result, giving the impression that the vessel is at anchor, while in reality she may be doing a good twelve knots an hour. But



THE OUDE KERKE, AMSTERDAM.

W. J. Farthing.

someone may say, "But what about the bow wave which in that case would be apparent?" The answer is that it may not be sufficiently prominent to arrest the eye at once, and in a photograph where motion is denoted this ought to be, if not the most prominent feature, at least sufficiently evident without a microscopical examination.

Before the advent of the dry plate, and even after its discovery, photographs of waterfalls and running streams were on the market, which gave one the impression that the former were snow-wreaths in summer, and that in the latter flowed molten lead instead of limpid water. The time exposure necessary to impress the surroundings on the plate was responsible for this. Nowadays there is not so much excuse for this anachronism. Plates are more rapid and shutters can divide seconds into minute fractions. But despite this running water is a difficult subject to portray correctly. "The weariest river" that "winds somewhere safe to sea" is, perhaps, the most difficult of all, while a babbling brook embowered in trees is not far behind. I once saw a photograph where a stone had been thrown into the water immediately prior to the exposure of the plate. The circular ripple was faithfully portrayed—too faithfully, in fact, for the eye caught it at once. It was the principal feature in the composition, although not so intended. Had stones been thrown in rapid succession these ripples might have lost the circular effect and made a better picture. This may be one way of overcoming the molten lead appearance, and another and perhaps more effective method is to take one's station where there is a natural "swirl" on the water. If this is captured there will be no mistaking the photograph for that of a placid lake on which no movement is looked for.

The brook, of course, requires a very rapid exposure to catch the ripples and a waterfall is in the same category. Where dense foliage renders the surroundings not amenable to this treatment, I have seen it stated that two negatives may be necessary—one very rapid for the brook or waterfall, and another much slower to allow the foliage and deep shade to impress themselves on the plate. Double printing is thereby necessary, but to those possessing the requisite skill this presents no difficulty.

Other subjects may suggest themselves to readers of these lines, but enough may have been said to make some of them hold their hand when a charming composition presents itself to the eye, but which, lacking the sense of motion, would result in a print something far from exhibition standard, and many of us have enough of this class of work beside us already. Haven't we?




NEAR SUNSET.

F. C. BAKER.

FROM A HOBBY TO A BUSINESS

By RICHARD TROTTER JEFFCOTT.

T is an easy confession to make when I state that photography has been my "hobby" for nearly twenty years. This much I will add, that the turning point from "Amateur" to "Professional" was accomplished without speech making or a flag raising.

With the issue of the 1909 Annual my modest sign appeared on a door leading into a suite of four rooms on the top floor of an office building centrally located. The rooms were well lighted from the north and east, had good water facilities, electric current, janitor and elevator service.

My line, known as "Commercial Photography," embraced developing and printing for amateurs, certain lines of commercial work, advertising photography, and making lantern slides, enlargements, copying and framing. Portrait work was not done, except model work when necessary. The policy being outlined as to the work desired, required further the fitting up of the various rooms along up-to-date lines governed by a good business system.

The system once laid down and accurately followed made easy sailing even under heavy pressure of business.

The suite contained an office, printing-room, general work-room and dark room. As the rooms were closely grouped, little space was lost, and installment of the up-to-date plant went readily forward. Perhaps the description to be given will be helpful to others who may desire to equip such a plant.

The entrance to the office (Fig. 1) from the corridor was of easy access from the elevators. This room when furnished had little resemblance to a business office, but rather that of a library effect greeted the eye.

The calcimined walls were in two colors, buff and old rose, a picture moulding separating the two. From the moulding

was suspended framed prints nicely mounted, covering a number of subjects likely to attract the eye. The entire furnishings were in mission, each detail being strictly looked after.

The floor was covered with linoleum of a quiet tone, on which were laid grass rugs.

The furniture was selected with care, having in view the placing of each piece, so as to aid the artistic effect decided



OFFICE.

(FIG. 1.)

R. T. JEFFCOTT.

upon. For instance, several ideas were incorporated to complete the furnishings, yet were of value in indicating the line of business desired.

Between the telephone table and door to the printing room a three-fold mission screen was placed. The panels of the screen were filled with dark green burlap, to which were attached various prints in sepia and black: showing several ideas in mounting and color combinations.

From the ceiling over both the desks, cords for lighting were arranged, special shades were made of thin copper, being 2 inches wide at the top, and 8 inches at the base. The

four panels were of ground glass, and by a special adjustment of the lamps even illumination was obtained for the lantern slides, which were laid on the ground glass and held in position by spring clips of brass.

Again, to break up the circular line on one side of the room, a swinging frame was made to hold transparencies. These three ideas were so arranged that from time to time fresh samples of prints, lantern slides and transparencies might be shown.

The business system was carefully arranged, yet unobtrusive, and experience has proven the idea a good one.

The office was equipped with a filing cabinet containing names of prospective customers, order book, work tickets, billing and shipping forms, and so arranged that all work in hand or prospective might be reported upon instantly. For instance, when plates or films were left for finishing, the original entry was made in the order book, consecutively numbered and dated. The work bag bearing name, number and date, together with the work ticket, in duplicate, was made out on the typewriter. From the office to the particular division the duplicate ticket was sent, together with the work, the original work ticket finding place on a special file under serial number. On the return of the work from the last division after inspection, both the duplicate and the original ticket were returned for charging in duplicate, then the price checked and placed in the delivery division. This system was so simple and effective that "mixing" was reduced to a minimum, as each portion of the work was readily numbered for identification. The duplicate ticket bearing on its final return, remarks regarding correct sizes, number of prints (mounted or not), paper used, and such general information at all times necessary for duplicate orders at a later period.

The advertising was carefully looked after, original lists were frequently checked, additions or changes made from time to time; announcements, price lists and pithy, illustrated cards sent out monthly.

Being fully aware that order, cleanliness and rigid observance of the system were the keynote to a successful business, the solid foundation began to bear added weight.

The accompanying cuts give perhaps a fair idea of the plant

as being complete and up to date. I acknowledge with pleasure that considerable of it was "home made" and that the ideas employed were original with me or specially constructed to meet my requirements. Little money was spent for experiments or changes after the idea was found to be practical, for all planning was made with the knowledge that future business on a large scale would be welcome and not a handicap to the plant.

The entire floor space was first covered with linoleum and



PRINTING ROOM.

(FIG. 2.)

R. T. JEFFCOTT.

washed up every night so that dirt and dust was not numbered amongst other sins.

The printing-room (Fig. 2) directly back of the office is about 13 by 14 feet. Along the south wall were built the entire printing, changing, developing, fixing and washing outfit, so arranged as to be almost automatic.

At the east end was installed the lamp box and frame shelf for printing, the box being probably 12 in. by 12 in. by 18 in., and containing a tungsten lamp, seventy-five candle-power, the opaque screen being raised and lowered by foot-power.

Directly back of the opaque screen is a light screen for diffusing light when printing from thin negatives, this being controlled by hand, all guides, pulleys and frames being suspended overhead from the wall. An opaque spring roller curtain separates the lamp box from the changing compartment between the developing sink and light box. All prints being matted, the mounted masks were kept underneath all marked and numbered, together with the printing frames and paper stock. The developing sink 20 in. by 30 in., is 37 in. from the floor, covered with a work bench as described in the 1909 Annual.

From the changing cabinet the print is placed in the tray, gently sprayed with water, developed and placed in the fixing bath (made fresh daily). The illumination for this work is from a special lamp box overhead, throwing the light downward. From the fixing bath, the prints are placed in the wash sink, 24 in. by 50 in., enamel lined, and with a specially constructed outflow. The water from the tap first enters a graduate (or force breaker) so as not to injure the prints and fills the tank to a height of $3\frac{1}{2}$ inches. The plug or pipe is then inverted, having an outlet of perhaps three-sixteenths of an inch and then covered with a stand pipe, having a serrated edge. This permits the prints to wash thoroughly, and yet is so arranged that should a print reach the top of the overflow it cannot cut off the outflow and cause a flood. The prints, when removed from the washing tank, are cleaned with cotton, placed between blotters to absorb some of the moisture and then placed on a drying rack, made up of nine strainers each, 2 by 4 feet supported on seven-eighths dowels inclined at a 15 deg. angle. The dowels are 6 inches apart on centers, permitting quick drying (flat). Rush jobs are handled as above except that a 12-inch electric fan is arranged under the strainers to hasten the drying.

The balance of the room is arranged with divisions for new orders, partly completed orders and finished work. Storage shelves are arranged for card stock, forms and other tools. The center of the room is occupied by a work table 4 ft. 6 in. by 6 ft. 6 in. with drawers for large cards, mounting paper, etc.

The questions of excluding the light and arranging for ventilation were cared for by constructing tight-fitting frames in the windows. The frames were made in one piece, covered with carpet felt, tacked and moulded. At the top of each frame a light excluding ventilator is framed, changing the air constantly and making working conditions agreeable in the hottest weather. One frame is suspended from the window casing with hinges, having pulley and guide lines and can be readily hoisted to the ceiling. The frame nearest the lamp box is bolted to the frame and is furnished with a daylight opening (screened) to be used in printing from hard or dense negatives.

The general work room is between the printing room and dark room, measuring 14 by 15 ft., is lighted by four windows, two each north and east.

Along the south wall is arranged storage space for view and studio cameras and outfits, copying camera and other instruments; shelving is arranged for negatives and smaller apparatus; and specially designed apparatus for making lantern slides, enlarged negatives and positives, copying, etc. (the same is described in a special article on page 189).

In this room arrangements were made for retouching, coloring, spotting, etc. The making of negatives for advertising purposes, including catalogues, booklets and small commercial work, also binding and finishing of slides for lectures.

The east windows are arranged in a similar manner to those of the printing room, having screens to close out the light and being readily adjustable for raising to the ceiling.

The combined dark room and enlarging room is designed to meet the most exacting uses and yet is so arranged as to be almost automatic (see Fig. 3). The size is about 10 by 14 ft., containing washing sink, 24 in. by 50 in., developing sink, 20 in. by 36 in., changing and work table, 2 ft. 6 in. by 7 ft.; enlarging apparatus for both daylight and electric light, together with ample space for tray bins, storage for fixing baths, chemical shelves, heating apparatus and refrigerator. This room is also thoroughly ventilated and is supplied with a fan, for successful work is only accomplished under the best of working conditions. Particular attention was given this room regarding cleanliness. All shelving was arranged

so that it was sufficiently off the floor for easy cleaning. Bins for trays with drainage, hypo containers, etc., were all slightly elevated.

The room has but one large window (north), this was



DARK ROOM.

(FIG. 3.)

R. T. JEFFCOTT.

specially framed with $1\frac{1}{2}$ -in. material rabbetted to exclude the light. The frame was in solid stiles, the spaces being first covered with black lining, carpet felt and then lined on the outside. The entire frame was hinged and bolted, cords attached to pulleys for easy hoisting and supported when raised

by a swinging leg. The center portion was arranged to hold the 8 by 10 enlarging camera for daylight enlarging. The camera was buttoned in place and further supported by an angular brace hinged to an accurate level.

Between the steel beams, just below the ceiling line, two pieces of yellow pine, 2 by 3 in. by 14 ft. were arranged to support the carriage from which was suspended the enlarging easel. To these supports were fitted the track, several braces being bolted so as to keep the whole in perfect alignment. Screwed to the base of one of the long supports was a piece of brass $\frac{1}{4}$ in. by $\frac{3}{4}$ in. by 5 ft., having holes 3-16 in. bored about 5-16 in. on centers. Attached to the easel support was a spring lock controlled by a rod and thumb screw. After obtaining the approximate size desired the screw head was turned, releasing the pin which entered into the nearest hole, then accurately focusing for size. Any pressure against the easel in placing the bromide paper did not disturb the position in the slightest. The easel when not in use was moved back by means of cords and pulleys. For large work a guide and support was built on the easel to carry a sub-easel for enlargements up to 6 ft. long. The sub-easel and the two trays when not in use were stored on cross braces between the legs of the printing room table.

On the outside of the window outriggers were projected to carry at a distance of 27 in. from the sill line, a pipe frame adjusted at an angle of 45° , to which was attached a frame covered with white oilcloth for reflection. This apparatus was devised so as to be practically automatic, locking into place with little trouble when needed.

The room was further equipped with scales, both for chemicals and hypo (both glass covered) extension telephone service, room for plate stock, separate bins and covered boxes for various dark-room material. For the drying of films adjustable wire lines were arranged, these equipped with spring clips.

The negative racks with troughs were first furnished with side cleats for support, then painted with asphaltum and were arranged to slide between the cleats on iron L's along the wall so as to have them in a secure position and out of the way.

Over the work table were arranged a set of five shelves for holding various sized plate holders, dust brushes, and other

parts. For illumination an electrical lamp was suspended from the wall, throwing downward a safe light for loading or marking plates and films previous to developing.

Over the developing sink a shelf within easy reach held the various graduates, mortars, etc., suspended from this shelf were arranged strainers, pans for heating of water, thermometer, etc., also a sub shelf for restrainers in solution and minimum graduates for quick use.

The question of a safe dark room light was solved in this manner. To the wall directly over the developing sink and underneath the shelf was fastened a light box, 12 in. by 12 in. by 14 in., made of $\frac{1}{2}$ -in. poplar with light, tight corners. This box was open on the bottom for fitting the orange and ruby glass between which was laid orange paper. The light strips were carefully fitted, so as to exclude white light. On the right hand side of the box a door 5 in. by 5 in. was hinged for the replacement or adjustment of the lamp. The box was also lined with the best quality of asbestos, so as to be entirely fireproof. Connection to the lamp was made from the center fixture to the shelf and then through the top center, the lamp being suspended from the attached base. This gave a most satisfactory arrangement as a safe light was thrown directly on the work, yet being out of the operator's eyes.

The question of water supply is a serious one to the average photographer, particularly in high buildings, where it is pumped to a tank on the roof, which in summer is thoroughly warmed and unfit for use unless hardening baths are constantly used.

The following method was adapted and with considerable success. To the supply pipe was attached a Roberts filter guaranteeing pure water. A purchase of five 1 gallon bottles was made to hold the filtered water; these in turn were stored in a No. 3 Royal refrigerator so as to keep the needed water for solutions at a temperature of about 60 degrees. The refrigerator was placed on a truck or frame with castors and pushed under the work table when not in use. In making up chemicals which required dissolving in hot water, an alcohol stove of unique design was purchased for the purpose.

Perhaps this description, curtailed somewhat owing to space, may be of interest to many. It has proven that to run a plant profitably and with only a few employees it is necessary at

the start to carefully design and plan for future developments.

A good system faithfully adhered to, keeping promises and the turning out of the best grade of work at market prices under personal supervision means a good livelihood for yourself and others with sufficient means to discount your bills and increase your working capacity at little expense as future experience warrants.



DAISIES.

L. J. FITLER.



PATIENTLY AWAITING
THEIR FATE.

M. O. HAMMOND.

HUNTING BUFFALOES WITH A CAMERA

By M. O. HAMMOND.

WHILE former President Roosevelt was hunting away off in Africa, and the entire continent followed his daily bag with as much interest as a baseball score, there was being enacted a little drama in the wilds of Montana last May which furnished a few fortunate spectators with something to treasure in memory as long as they live. This was the hunting, or, perhaps more correctly speaking, the round-up of three hundred buffaloes purchased by the Canadian Government from Michael Pablo, the rancher who owned them and pastured them on a wide, open ranch, a valley west of the Mission Mountains, and near the Washington State boundary. With a pasture field of perhaps a thousand square miles, and with

only rarely the sight of a human being as an isolated rancher followed the mystic trail through the valley to his farm beyond, the herd became quite wild. A generation ago "Walking Coyote," returning from a buffalo hunt on the Canadian prairie, sold a score of his buffaloes to Pablo and his partner, and since then the herd has increased to eight hundred, all of which were bought by the Canadian Government right under the nose of Uncle Sam, in 1907, and they have practically all been delivered.

The May round-up followed extensive preparations by Pablo, a wealthy half-breed, and Poobah of the Flat-head Reservation. A large trap bounded in a semicircle by the Pend O'Reille River, and on the other side by a stout fence, was the objective point to which the buffaloes were driven, and after they were landed they were driven into a smaller enclosure to await shipment. Wing fences were built from a point five miles beyond the river opposite the large trap. The riders circled out into the wilderness with western dash and brought their quarry from the Bitter Root Valley, landing them in the river, which they readily swam to the enclosure beyond. The riders were of the best of Montana's cowboys and their strongest qualities were needed for the task.

The Pablo camp was on the river bank and its provisions had to be hauled twenty miles from Ronan, and sometimes days passed without communication with the outside world, so remote was the center of activity. The riders were up with the sun and off to the hills at a canter. The buffaloes usually run in groups of perhaps eight or ten, perhaps twenty or thirty. One rider could start a small group, for the buffaloes were at first shy of intrusion and ran from the hunters. They seemed to know there was danger ahead and made many attempts at escape. Their endurance and speed on foot, and their strength when attacked was matter for great surprise to all but those who had previous familiarity with them. Once started, they were headed on between the fences and driven by the full force of riders to the river. Arrived in the water with a splash, the baby buffaloes on their mothers' backs, they swam across, not without some efforts at escape upstream, but eventually they landed in the desired precincts of the large corral.

The two or three photographers who were present usually confined their efforts to the scenes within the large corral, as following the game through the wilderness was a hazardous proceeding and almost sure to result in failure, as it was impossible to get near the buffaloes, first, because it was none too safe, and secondly, it would interfere with the work of the round-up. A favorite location was on the bank directly opposite the outlet of the lane. It was at this point during the round-up in the fall of 1908 that N. A. Forsyth, an enterprising photographer from Butte, Montana, had an adventure not duplicated by any other man in the world. Forsyth had planted his camera on the river bank at a point that would command the herd when they landed. They landed all right, only to keep on going; but instead of continuing into the corral, they turned toward the photographer, who, after he had taken the picture, made a dash for the limb of a tree near by. He was not safely landed when the enormous herd of one hundred and seventeen buffaloes reached his location. One of them got under Forsyth's swinging body and gave him a hoist which sent him safely into the limbs, while the maddened black beasts passed under him at the speed of a train. Forsyth's trousers were nearly stripped from his body, his camera was smashed except, miraculously, the plate he had just exposed, and he himself escaped with few scratches and was on hand again during the round-up of the present year.

But this is a digression. The buffaloes of 1909 made many attempts to get away. On several occasions the entire catch of the day or half day escaped by swimming the river against a ten-mile current or breaking fences not strong enough to withstand their heavy assaults.

The wealthy half-breed rancher and his marshals had constantly to resort to "headwork" to meet their wily enemies. The place of the photographers in the proceedings was somewhat precarious; so great was the belief that a man's presence anywhere interfered with the work that a mere spectator was not popular. The buffaloes were to get their wind and to balk at entering the corral at the psychological moment. In spite of all difficulties I was able to hug the corral fence tightly and get a few glimpses of the buffaloes at close range as they were thrust back and forth towards their corral.

•Sometimes the buffalo, tired of the eternal hunting, would turn on his pursuers, and if the horse were not both swift and cunning there would be more casualties to report. Sometimes it was necessary to use revolvers at them to turn them, and several riders had narrow escapes when their horses were charged by the infuriated beasts. The lighting for photography was satisfactory, as the western light usually is, being of an intense brightness and suitable for sharp pictures and short exposures. The shutter of the camera I had did not work faster than one-hundredth of a second and this was quick enough in most cases, the diaphragm being generally eleven or sixteen.

Perhaps the greatest excitement of the round-up occurred when loading the buffaloes into the wagons. The plan was to drive them up a chute into cages loaded upon strong wagons. These cages were at once found to be too light in structure, for the buffaloes on entering them smashed them into splinters. New ones were then built and the work resumed, but not a few of the buffaloes took strong exception to this humiliation and fought every inch of the way into the cages. Eventually two hundred buffaloes were corraled and loaded, the balance of one hundred and thirty being left for a future occasion.



IN THE LOADING CORRAL.

M. O. HAMMOND.



Rudolph Duhrkoop.

49

PHOTOGRAPHING LIGHT

By JOHN CHISLETT.



HOW few photographs we see that really glow with light. Many of them are evidently taken in sunlight—bright sunlight—and there are dark shadows and light spots, plenty of them, but no real light in the pictures, and we are all well acquainted with the heavy, dull, somber general effect of our principal photographic salons and exhibitions. Here and there a picture shows light, but the low-toned effect is the general rule.

Artists to-day are painting light, and the photographer must sooner or later follow him, and why not? It is certainly beautiful, and it may be art in the truest sense of the term. The technical difficulties are great, but instead of discouraging the photographer this should only encourage him to greater effort.

The making of pictures that are filled with light has always been one of the writer's dreams, and the result of much experimenting may be of interest. The accompanying illustration (selected from four prints submitted.—Ed.) was made as follows: Using a single landscape lens $2\frac{1}{2}$ in. in diameter and 16-in. focus, at full aperture, a Cramer Instantaneous Iso 8 by 10 plate and Burke & James Ideal color screen, an exposure was given (directly towards the light) of twelve seconds. Experience has taught me that success depends mainly on two factors, viz., the selection of a suitable quality of light and the development of the plate. As to light, the suitable kinds are the misty, veiled light of early morning, and the soft, yellow light of evening. The hard, white, summer sunlight I have been unable to handle by any method of working.

Development is of the utmost importance, and I have found no satisfactory method except the old style one, of watching the plate carefully, looking at back and front and through it as development proceeds and learning by practice to know when it is just right. A little underdevelopment and the result is dull; a little over and it is too contrasty, and in either event

the effect of light is not there, and no after treatment will bring it there just right.

Plenty of exposure, should, of course, be given, but there is so much latitude in this that the chances of going astray are small, the exposure simply deciding whether the resulting negative will be dense or thin. But we all have our different methods of working; the result is the thing, however obtained.

We quite often see snow scenes filled with light. They are comparatively easy to render owing to the conditions. But the ordinary landscape with sunlight shining in it is a most difficult proposition, and one well worth all the time, effort and expense necessary to obtain it, and I wish to urge all pictorial photographers to earnestly tackle the rendering of light. There has been and is too much gloom in photography and we sorely need the light.

The accompanying illustration, the "Sun-Bath," was made in the yellow evening light just before sunset.



THE SUN BATH.

JOHN CHISLETT.



VIEILLE MAISON.

A. GOMEZ GIMENO.



GUSTAV EISEN.

A MOUNTAIN ROAD.



ELTZ CASTLE.

R. S. Bruce.

100



FOREST SCENE.

RUSSELL BURCHALL.

IN A SURREY PINEWOOD

By RUSSELL BURCHALL.

THE privilege of an unexpected day's holiday causes the recipient some hard thought as to how the precious time may be most profitably spent. The districts at comfortable walking distance from home having been thoroughly explored, it is decided to go further afield on the quest of pictures. Upon arrival in the heart of Surrey the day is still young and glorious and the morning sun seems to enjoy exercising its power of imparting wondrous tints to a great overhanging mass of cumulous cloud that is so full and rounded that it must seemingly share the inevitable fate of the soap-bubble—and burst. With camera on back and every prospect of a good day the miles of country lanes rapidly unwind, until at the foot of a steep hill progress is arrested by the appearance of a pathway into a wood. The line—"Enter these en-

chanted woods"—flashes across the mind of the seeker, who, with his customary worship and love of the god Whim, turns, walks up the pathway, and obediently enters.

At the end of the arcaded entrance path the profusion and variety of early summer beauty are quite bewildering. On the right a pinewood with delightfully fresh undergrowth forms a magnificent setting into which the sunlight plays with exquisite delicatessen a gorgeous harmony in green and gold. Running through the innumerable and infinitesimal shades and colors of the undergrowth a marvelously complete pattern of glittering and scintillating points of light invites yet utterly defies analysis. Ahead, through a gauzy screen of foliage, can be caught occasional glimpses of a lake, the presence of which was as unsuspected as that of the wild man of Borneo and his multitudinous relatives. To the left tall, straight-limbed pines clothe a hill of some considerable height to the very top. The path surrounding the lake is as delightful as the rest of the retreat and on the one side is bordered by the symphoniously toned undergrowth and many young and beautifully formed pines whose black trunks and ramifications make most effective decorative silhouettes against the large masses of white cloud; while on the lake side of the path the rich sedge forms a translucent mass of living green. In the water within a yard or two of the bank is a little wooden structure greatly resembling the torii (or perch for birds) that always serves as a prelude and a token of the existence of a Japanese Shinto shrine. At lunch, with Kipling and Shelley (a quaint juxtaposition) as companions, loneliness seems to be utterly and impossibly remote. As if to avert, however, any possibility of the sense of isolation becoming in any way unpleasant, the Surrey traffic can be heard very faintly and seemingly rides away like a blowfly dying beneath a cabbage leaf—a fine simile—you know the sound? Of course neither book was brought to be read, but the act of glancing through Shelley in an idle semi-conscious way at the lines where Alastor beheld "The motion of the leaves, the grass that sprung startled and glanced and trembled ever to feel an unaccustomed presence," brings home the idea with something of a shock, that the present spot is the perfect embodiment of Shelley's wood. When the remnants of lunch have been dispersed the camera

is quickly brought to bear to record the delicacy of a young oak sprig growing in solitary splendor among the rank grass and gloomy pines into whose dim sanctuary the invading sunshine brings a magnificent glow of unaccustomed light.

By the way, why do so very few photographers make a practice of illustrating their favorite books with their photographs? The habit of reading with an eye alert for inviting subjects is one that adds much to the attractiveness of any book; vastly improves the reader's capacity for appreciation of what is good in descriptive writing, and, in addition, imparts to the volumes so illustrated a personal charm that alone would make the pursuit worthy of a following.

After spending nearly the whole day within a circle of a few hundred yards diameter the Seeker's holiday time draws to a close. The wind rises for a moment and the sun disappears behind a cloud. The sighing of the breeze among the pines adds greatly to the sense of regret felt on leaving such a fascinating spot and takes away much of the joyousness caused by the summer sunlight. The fair day is done.



FOREST SCENE.

RUSSELL BURCHALL.



NIGHT ON WATER.

H. H. BROOK.



THE CELESTIAL SHOWER.

F. A. RUGG.

NIGHT PHOTOGRAPHY

By FRANK A. RUGG.

AN evening illumination across the water possesses a wonderful charm for almost every one. There is in such a scene a strong suggestion of fairyland. It is not surprising, then, that the enthusiastic photographer, who is striving to enlarge the field of the camera, should turn his attention to the beautiful effects, not only of twilight, but also of the darker period that follows.

A good many years have already passed since the first successful ventures in night photography; and yet there is, on the part of most people, a surprising ignorance of the possibilities open to the careful worker even after sundown. The familiar flash cartridge seems to have taken such a tenacious

hold on the public mind, that the man who is trying to operate his camera out of doors after nightfall is almost sure to hear: "He's going to take a 'flashlight!'"

Even while making ready, last July Fourth (1908) for a shot at the fireworks display at Jamaica Pond, Boston, the writer was greeted by just such a remark. In this case, however, there was no need for any illumination from without, since the scene before the camera was in itself a flashlight or rather a series of flashlights.

The process was simple. The lens was opened wide and the fireworks did the rest. Moreover, the management unwittingly lent a hand by the firing of several of the set pieces out of the intended order. The result on the plate was the "blaze of glory" to be seen in one of the accompanying pictures.

From one point of view each photograph is a time exposure, as it is a record of two or three minutes, showing all the fireworks of an actinic nature that came in front of the lens during that time. In another sense each picture is a composite of instantaneous views, for every streak of white was indeed a "flashlight."



FIREWORKS ON JAMAICA POND,
BOSTON.

FRANK A. RUGG.



AN AUTUMN SYMPHONY. Copyright 1909 by H. HENDRICKSON.



THE LIGHTS OF THE CITY.

H. H. BROOK.



A MOUNTAIN PATH.


W. H. Ran.

1000

1

THE SIMPLIFIED AUTOCHROME PROCESS

By MAXIMILIAN TOCH.

N the May number of the *American Photography* there appeared an account of a simplified autochrome process which I had demonstrated before the New York Camera Club the previous March, and while attending the International Congress of Applied Chemistry in London in June, 1909, I had the pleasure of witnessing a still further simplification of this process through the kindness of Mr. Howard Farmer at his laboratory in the London Polytechnic. The later method is practically the same as mine, excepting that it is more certain and if anything reduces all operations to a more simple method. I had recommended the use of a mixture of hydroquinone and metol, but the Lumières have made a molecular compound which, as near as I can gather, is much more uniform in its working. It is sold under the name of "Quinomet."

Having properly exposed an autochrome plate, I took it into the dark room fitted up with the regular ruby lamp. I turned my back to the light so that no direct rays fell on the plate, placed it in a tray, added the developer and after 5 or 10 seconds turned around so that nearly the full light fell on the plate. I then developed until the shadows came out fully, which sometimes took 70 seconds, sometimes 80 (depending on the temperature of the developer, of which I took no notice), rinsed the plate, both sides, in running water for about 10 seconds, placed it in the standard permanganate solution, and after rocking a half minute or so I took the plate out in the strong light.

At this particular point care must be exercised as follows: See that the permanganate solution is clear and purple in color—not muddy and brown. If it be muddy it will not reverse the picture and you must immediately wash and place it in fresh solution. Second, keep rocking all the time it is

in the permanganate and examine from time to time by transmitted light and take no notice of the length of time, but as soon as the picture shows up in all its colors, and is of a uniform tone without brown coffee stains, wash it in water for 20 or 30 seconds and place it again in the first developer and develop in the strong light until it turns black, or very dark gray. Then wash again, dry and varnish and you have an excellent picture in the colors of Nature.

The whole operation, with a little practice, is simple and takes not over 10 minutes from exposure to varnishing, assuming that you can dry the plate by means of an electric fan.

You must remember that once your image shows up in the developer, you can restrain it, force it, soften it, in fact you can handle it exactly like any other plate, and in order to have good success just keep away from anyone who tries to impress you with the great difficulties which the process involves, because these are largely mythical.



AT THE BREAK OF DAY

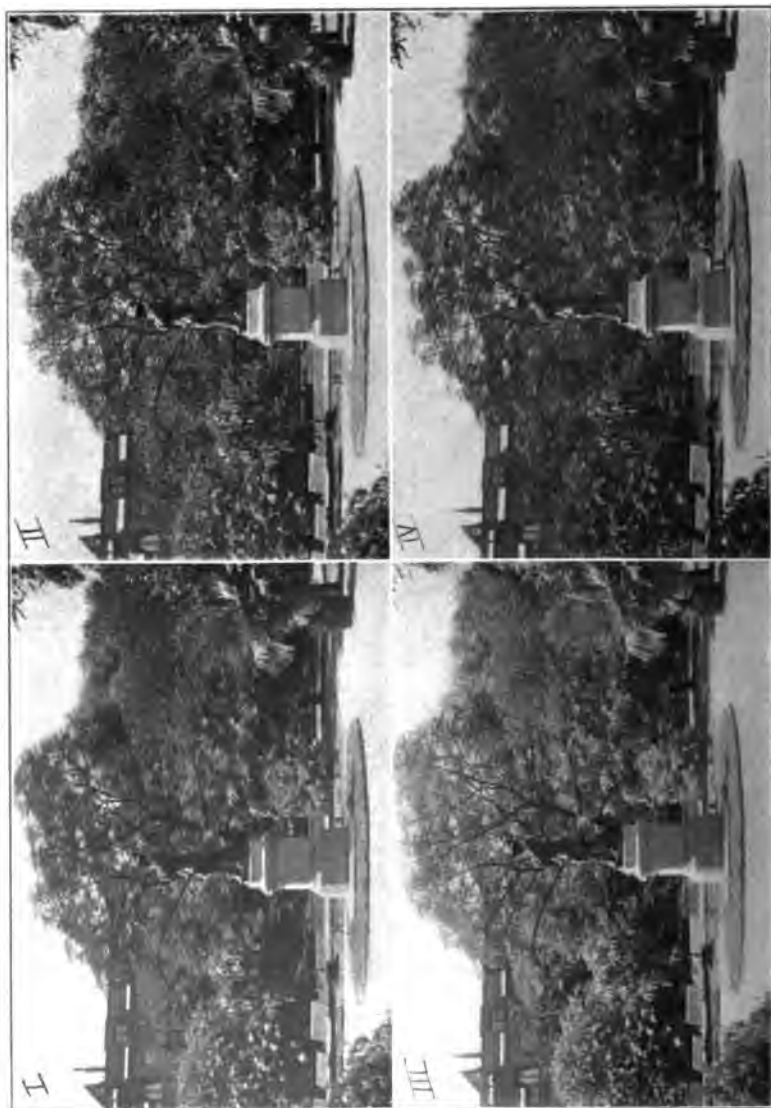
E. G. DUNNING.



NIGHT SCENE.

H. H. BROOK.

*Exposure 10 minutes, 8 p. m. February.
R. R. Lens, F8; Extra Rapid Plate.*



ILLUSTRATING THE ARTICLE BY MALCOLM DEAN MILLER, M.D. PAGE 249.




PORTRAIT

Shewell Ellis.

44

THE PRESENT STATUS OF ORTHO-CHROMATICS

By MALCOLM DEAN MILLER, M.D.

N the Annual for 1908 I published some "Notes on Red Sensitive Plates." This year I feel that, in view of recent commercial developments, it may be well to restate the whole problem of plate and filter from the point of view of the landscape photographer.

Plain plates, as everyone knows, are most sensitive to ultra-violet, violet and blue light, and very slightly to blue-green. The use of a filter results in no improvement, because the filter passes only light to which the plate is insensitive.

The old type of ortho or iso plate, in which the sensitizing dye is erythrosin or some similar color, has special sensitiveness to the yellow and the yellow-green, but remains insensitive to the pure orange and the red, and the maximum sensitiveness continues to be in the violet. Such plates are the Cramer "Instantaneous Iso" and "Isonon," and the Lumière "Ortho A." Although the exposure meters and tables list them as being the same speed as the Crown or the Blue Label, this is true only in very yellow light, as at sunset. For all practical purposes, to get full exposure in the shadows and avoid extreme contrast, they must receive two or even three times the exposure of the plain plate under the same conditions of light, when used without a ray-filter. The "Ideal" four times filter is well adapted to them. "Isochrom" sixteen times filter gives better values and a more harmonious effect. Some of the best work I have seen was done on Cramer Instantaneous Isos with the "Isochrom" screen, the operator using $f/16$ and one-half second as a standard for average landscapes in the brightest summer sunlight at midday. The developer should be used with double the regular quantity of water. Underexposure is fatal. If the factors given above are used, the exposure may be calculated as if the speed of the plates was the same as the Crown. The dark-room light must be a deep red, and the plate should be covered until development is nearly completed.

The next class of plates is the moderately red-sensitive, including the Cramer trichromatic and the Lumière Panchro C. In these the sensitiveness has been extended somewhat into the bright red of the spectrum, but the blue-green, the orange, and the red do not impress the plate as much as the yellow. They must be handled in complete darkness, except that toward the close of development, when they have lost most of their sensitiveness owing to the action of the developer, they may be examined by deep red (or by the Lumière "Virida" paper green) light. They work much less harshly than the preceding class. The speed of the Trichromatic is given as being the same as the Crown, but double exposure gives better shadow detail. With the Panchro C, used without screen, I have found it necessary to give three times the exposure for the Crown. The four times filter may be used just as before, but the "Isochrom" is better whenever conditions will allow the longer time. Lumière's "Autochrom" screen is excellent for these two plates. The standard exposure with it on the Panchro C is one second on $f/16$, *i. e.*, a factor of eight when the plate is listed at one-third the speed of the Crown. This combination gives almost absolute color values in landscape work.

Further improvement on a commercial scale is guaranteed by the work of Mr. R. James Wallace, the director of the newly established research laboratory of the G. Cramer Dry Plate Company. From the advance sheets of a booklet on "The Photographing of Color Contrasts," I find that Mr. Wallace has succeeded in producing a "Spectrum" plate sensitive to the entire range of color, and particularly so to orange and to red. This, it seems to me, is the plate for which we have been waiting. A series of seven filters is also announced of which the yellow "V. L." (visual luminosity) should produce absolutely correct values. The "Autochrom" screen, too, will probably prove satisfactory. The reputation of Mr. Wallace as the leading expert in color work in this country seems sufficient guarantee of the justness of the claims made for these "Spectrum" plates. The time before going to press is too short for investigation of the new materials, but I hope to have a report of comparative tests for the next Annual.



IN OLD ROUEN.

MRS. D. MAHONY.

NIGHT PHOTOGRAPHY

By JOHN BOYD.



KNOWLEDGE of night photography may aptly be said to be the "missing link" that makes an operator master of his art.

He may pride himself on having control of his lens, his shutter, and his developer, but when it comes to creating the source and volume of light, after "Old Sol" has dropped below the western horizon, he fails unless he has the means of working by artificial rays. To know, understand, and practically apply the power thus given to the photographer is the aim of this article, and it may be said "en passant" that there is yet plenty of room for new workers, new methods, and more perfect results.

Night photography can be successfully practiced with any camera, but it is hardly necessary to add that the better the lens the more chances one has to obtain prime results.

Plates.—The best plates are those of the orthochromatic or isochromatic makes. They should be of the fastest speed, and invariably backed or double coated. If these ortho or iso plates are not obtainable with the backing on, the user can apply it himself with any of the many varieties of mixtures that are given in the year books. The reasons for backing plates for night work are obvious to many, but to the tyro I would say it enables one to obtain better results with white drapery, etc., as it tones down the intense high lights to a more correct rendering of the color values. Further, it permits the lights in a room to be kept burning during the time of exposure; and even where the subject itself is the source of light it prevents halation, and preserves the details. No one who has used backed plates for any class of photography will ever again voluntarily go back to those not so treated.

Focusing.—Do this very carefully, and with the lens wide open. A little vaseline, or even water, rubbed on the rough side of the ground glass will aid the operation very much. In dimly lighted rooms, or in any similar situations, get some one

to hold a lamp, candle, or match at various spots on the subject, so that what is wanted on the plate may be included, and in proper focus. If portraits or groups are being taken, see that the subjects are posed away from the walls, backgrounds, or anything that will intensify the shadows that are consequent on the use of flashlight powder. Be careful also to see that they are placed so that the shadow of one will not fall on another, for as stated before, if one light only is used, the shadows are very strong, but when a battery of two or more lamps are operated they counteract the effect that is consequent on the use of single lights placed in certain positions. This brings us to the position the lights should be in, and in order that the worker may determine where his light should be placed, I know of no better plan than to take a bicycle or carriage lamp of the bull's eye style, and project it on the subject from various places, outside the range of the lens. Try it from different heights and angles noting well how the shadows change, and when you have got the desired effect, there let your light for making the exposure be placed. I aim to get as close to the subject as possible, so as to get a fully exposed plate, with a minimum amount of light.

Light.—The sources of illumination available for night photography can be either that obtained from the moon, magnesium powders, flash sheets, electric light, acetylene gas, gas light, or even candle light.

Exposures.—The smallest stop that ought to be used for this class of work is F 8. The length of exposure varies greatly, running from one-fifth of a second for flash pictures, to an hour for moon or electric light views.

Groups or Portraits.—These are the most frequent subjects for evening work, and as they can hardly be taken at any other time, it behooves the worker to know how he can best obtain the desired results. Proceed first in the manner given under the section "Focusing." For the illumination, we have either electric light or the magnesium mixtures. The first gives a strong light, and it is necessary to place a screen between the lens and the subject, in order to diffuse its intensity. This screen may be of any semi-transparent material, or ground glass. A reflecting screen to one side of the subject and opposite to the light is a valuable aid to lighten up the heavy

shadows. Magnesium powder is either blown from a lamp made for that purpose, fired from a pistol or ignited by placing it on paper or cotton set on a plate, and applying a taper. Other forms are made up in cartridges with fuse, or in sheets which have to be touched off with a match. No matter which are used, the methods adopted for obtaining the result will be pretty much the same. When using the pure magnesium, 8 to 10 grains will suffice for a single portrait, and from 15 to 50 grains for a group, according to the size of the room; distance from the light and the reflecting power of the surrounding walls.

In placing the mirror or reflecting screen, the operator must be careful to set them at the proper angle, so as to catch the light, and throw it on the subject where wanted. I have found that by elevating the light some 3 or 4 feet above the heads of a group one gets results resembling those taken in a studio by top lighting.

Interiors.—By the aid of artificial light, and particularly the magnesium mixtures, very fine interiors can be made, in fact, there are many places that never could be photographed were it not for its aid. There are dark corners to be found in three-fifths of the public places that give no actinic reflections to the dry plate, but with these a small flash become models for detail to the methodical worker. Take again the interiors of mines, caves, cellars, underground offices, tunnels, sewers, etc., which are impossible subjects for day workers, but are open to the skilled manipulator of flash powder either day or night. By combining daylight and flashlight we improve on the work done by daylight alone. Thus supposing we have a subject where the light comes in from only one side, and that perhaps the very point directly in front of the lens. We are anxious to get a realistic picture, and therefore proceed in this manner: Set up the camera in the daytime, and give an exposure sufficient for the windows. Leave the furniture, blinds and camera as they are, and when it is dark, flash a couple of charges at both sides of the room, and you will have a negative, if all goes well, that will be worth your trouble. Suppose again, we have to take an interior with a dark corner where the rays of light will not reach, either day or night. We compose the picture on the ground glass, and arrange to set some opaque arti-



WIND-SWEPT.

ERNEST CLAYPOLE.

cle of furniture on a line drawn between the lens and the corner. The exposure is made for the general view in the usual way. We then make ready another charge and setting it behind the piece of furniture, and between it and the corner, set it off, after opening the lens, and we have reached the spot that hitherto bothered us.

Copying and Still Life.—We can make excellent copies by the aid of two oil lamps placed at each side of the subject, and of course out of the range of the lens. Ten to 20 minutes is about the usual time to give. With magnesium or acetylene gas it is proportionately shorter, according to the quantity used. Flowers or other like subjects are similarly arranged, taking greater care to have the shadows fall properly, which, if adroitly managed, gives results almost, if not as good, as those obtained by daylight.

Outdoor Work.—This is a wide subject, and only a portion of it can be treated of here in an article like this, and then very briefly, but it is a field that can be enlarged on by the explorer in night photography to his or her heart's wish. Very realistic effects are obtainable without much effort. A pretty thing is a lighthouse taken on a dark night, when the glare from the tower comes across a stretch of water. This will need 20 to 40 minutes, according to the power of the lamps, and detail required in the surroundings. A street scene after a rain storm or in fact at any time, when lighted by electric light. This needs to have as much detail as is obtainable, and an hour's exposure will be about right. Camp scenes with the customary bonfire, look well, and when aided by flashlight can be made with figures in natural attitudes. Burning buildings and gas wells are odd subjects, and very effective if managed properly. They can be taken by their own light in from 5 to 20 seconds, and it is best not to get the subjects too large on the plate, especially if the mass of light be large and strong. Lightning is of scientific interest, and the best results are to be had on very dark nights. Focus on a distant object, and set up the camera rigidly facing where the forks or chains appear most regular. If you want only the outlines of the flash, use stop F 32, but if some detail is required, and it is always better to include part of the landscape, use F 8. You then pull the slide, open the lens and wait the flash, afterwards closing

the lens as quickly as possible, to avoid getting another on the same plate. Do not attempt this work if there is much sheet lightning, as it will give nothing but a fogged plate. A landscape, building, or any still subject can be photographed by the light of the moon; in fact, they can be made to give better artistic results for some subjects than those taken in daylight. Give 30 minutes' exposure on open subjects, increasing it if any heavy foliage is near at hand. Strange as it may seem, my best work in this direction has been made when the moon cast no shadow, that is, the sky was overcast with white fleecy clouds.

In closing, I would repeat, that night photography is yet in its infancy, for although we can make what may be termed perfect prints, yet anyone who has practiced the art must freely admit there is yet much to be desired, both in the production of the illuminant and the means of using it. Those who take it up will find an unfailing interest in the work, and if this article has helped any towards success its aim shall have been more than accomplished.

POURQUOI?

By HENRY TROTH.



WHY are we not better served? The all-round photographer has often to face difficult propositions, and to get the best results should have first-class instruments.

The avoidable defects in cameras, shutters, etc., are entirely too numerous. Some of these we can, in charity, excuse as mistakes, but others, if not done with "malice aforethought," are still inexcusable, as the following quotation from a letter received from a manufacturer will testify. Apropos of speeds of focal-plane shutters he writes: "You will probably find that your low speeds are faster and your high speeds slower than scheduled." He further writes, "The majority of the between lens shutters do not travel within fifty per cent. of their indicated speeds; if we marked them as they really are people would not buy, thinking them too slow." Last year in Egypt and Palestine and in Italy and France I got a deplorably large number of underexposures with a faulty focal-plane shutter. It was not possible for me to properly test the shutter until after my arrival home from abroad. My tests then showed the low speeds to be three times faster than the speed card indicated. The maker has since acknowledged that the said shutter was faulty. I have had two of one make of automatic shutters; in both all speeds below one-fiftieth were unreliable.

That some lenses are better and speedier than others of same size and series there can be no doubt; but this is true of many manufactured articles, and is a condition which cannot be always easily explained. Practically all of the first-class lenses on the market seem to be above criticism, but it is a lamentable fact that one manufacturer at least deludes the innocent by making his F 8 lenses pose as F 6.8, a much more popular working aperture and therefore more saleable.



PIKE'S PEAK.

GEORGE L. BEAM.



SWEET PEAS.

R. BURNIE.

The faults in cameras, hand and stand, portrait and copying, soon make themselves manifest in varying degrees. Two examples as follows: An 11 x 14 enlarging and reducing camera by a manufacturer of record. The image on the ground glass in enlarging does not tally with its position on plate. Unless an adjustment is made before exposure, the image will not all be found on the plate. Also the springs on kits used in front of camera are fastened with small screws which constantly work loose. Small rivets should have been used instead of the screws.

An 8 x 10 view camera, which the manufacturer implies is the best yet in every way, having all the movements one could



GREEN APPLES.

R. BURNIE.

desire. When purchased, the sliding front on above camera had no stop to prevent its being pushed too far. It was quite within the possibilities to easily fog a plate thereby allowing light to enter front of bellows. This same camera has slots on upper sides of bed, to enable back of camera to be pushed forward for use with short focus lenses, but it has a set screw so placed that the back can be pushed forward very little.

The American camera manufacturer religiously gives, where possible, a double swing on view cameras. The vertical is often useful, the horizontal once or twice in a lifetime; it could very readily be dispensed with. The camera would be stronger and

more rigid without it. He also gives a fair amount of rise to the camera front, but in the majority of cases very inadequate "drop." The "at home" portrait photographer using any of the view cameras is "sure up against it," when trying to photograph children on the floor or in low chairs. Of all my view cameras the "Empire State" model is the only one I have used with satisfaction in photographing growing plants out of doors, as it is necessary in most cases to get a bit of the ground as well as the plant.

The English manufacturer appreciates the situation much better. He realizes that the swing back is only to be used when the sliding front fails to give all that is desired, and he tries to give you all the front movement possible. Even on the smallest hand camera of English make the rise and fall are phenomenally great. This is especially noticeable in those made by the Thornton-Pickard Co. and Adams & Co.

Considering the defects of the body of the instrument, it is not surprising that it seldom has a first-class set of outdoor legs to stand on. Tripods seem to have degenerated, as the average one on sale ten years ago had twice the durability of those of today. With the latter the brass fittings are soft, easily bent out of shape and threads on thumb screws very soon strip; also the legs in tripod top loosen easily.

The apparatus primarily intended for amateurs' use, viz., Kodaks, Hawkeyes, Brownies, etc., etc., with their various fittings and devices for developing, printing and enlarging seem to be all one could ask; and considering the light weight, small bulk and low cost of most of them, the results obtained are unusually good. With the amateur it is play; with the professional it is very serious business, and for that reason, at any rate, his tools should be as good as it is possible to make them.



THE THAMES.

FRANK E. HUSON.



PORTRAIT.

A. KEITH DANNATT.



IN CHERRY TIME.

Helen W. Cooke.

100



A STREET IN PARIS.

R. L. SLEETH, JR.

FLOWER PHOTOGRAPHY

By HARRY D. WILLIAR.



HERE is nothing in the field of photography, wide as it is, that will offer more beautiful or interesting results than flower photography. Flowers, be they wild or be they cultivated, appeal to everyone, whether photographically inclined or not, and it is my experience in showing prints to friends of my work, no matter whether landscape, marine genre or what not, it is the simple yet beautiful flowers of field or garden that seem to attract the eye and call for more admiration than any other subjects. Yet how few among the amateur photographers ever pay any attention whatever to this beautiful branch of the art.

Many seem to think that the field is full of difficulties. As a matter of fact it is far from difficult and the accessories needed are few. We eliminate the style of camera, as any good box and lens will do, although after you become more interested, as you surely will be, you may possibly improve on your lens or spend a few dollars to get one that will meet all your requirements; but I have found it not at all difficult to get good results with almost any lens of the numerous makes at present obtainable.

As for the accessories, any good background will answer, preferably of a dull surface, gray, black or terra-cotta, and it may be of paper, velvet, drilling or canvas, tinted to any of the above shades, or a commercial ground, such as is used for heads or bust portraits, but it must not be violent in effect or too contrasty. My choice, however, is a dull carbon black surface, which absorbs the shadows and gives relief to the various gradations of color in the flowers, especially if they show any of the delicate shades, white, cream, pink or of the lighter colors; but for the brilliant scarlet of the poppy, dahlias and other flowers of high color, I have found a pearl-gray background to give the better results, so it would be well to



JAPAN IRIS.

HARRY D. WILLIAR.

have two backgrounds. These may be on rollers or stretched on a frame say 3 or 4 feet by 4 or 5 feet, which any carpenter will make for a small sum. If you have a frame, on one side stretch your dark and on the other your light background.

For a reflector, I use a white cardboard or a piece of muslin, but even a handkerchief will often answer, hung over the back of any high chair on the shadow side of your flowers. Of course, a table of any kind will do, and it is well to have two or three old bottles filled with wet sand, into which insert the flower stems. By this means, almost any arrangement may be made and the wet sand will hold the stems in any position you wish to place them in, and at the same time it will keep your flowers fresh and free from wilting. Satisfactory results depend largely on the grouping of the flowers and the proper massing of light and shadows, which can only be learnt by experience.

Some have advocated fastening the subject against the background by strings, tacks or pins. Others suggest laying the flowers on a table top and the camera pointing down on them; but after many experiments I have found my usual method the most satisfactory, as it gives better control of the subject in arrangement and the lighting, for which purpose I use a window having a northern exposure, with the table 3 or 4 feet from it. If the light from the window is too strong, which would result in harsh or contrasty effects, it is easily softened by a piece of cheesecloth or paraffine paper. Many authorities advocate orthochromatic plates and while I have used them with excellent results, yet I am fully as well satisfied with a good slow plate, my personal preference being the Hammer slow plate.

I usually employ stop $f/16$ and about 30 to 40 seconds exposure, depending on the intensity of light. By using a small stop, as flowers are generally photographed at close range, you will get more uniform sharpness; particularly if the subject is only 4 or 5 feet from your lens, which is likely to be about the distance. Of course a larger stop would cut the exposure in half or less than half. If you do not use a small stop, some of the flowers will be blurred or out of focus if the subject be a bunch, a spray or a bouquet. Work with the window down, as the lightest zephyr through an open win-



DOGWOOD BLOSSOMS.

HARRY D. WILLIAR.

dow will play sad havoc and produce movement of the spray or branch in 30 seconds even though the air be ever so light.

As for developer, that will depend on the plate used and, as each maker of plates has a formula of his own, I would suggest using the formula recommended for your favorite plate. My preference here is metol-hydro; as soon as the high lights begin to show, I dilute my developer by adding as much again of water as was originally employed. Slow developing will produce more soft and pleasing results in flower negatives.

Some may ask as to what paper or printing medium is used, and, while it is not my purpose to advertise any particular goods, as all the best makes are good, and their names are legion, yet for such as who may wish the information, I desire to state that I have tried very many different papers and have settled down to "Cyko." When an enlarged print is wanted and one that is sketchy as well as artistic, "Cyko" Rough is used, but on the other hand, if for reproduction and a smooth surface is wanted and with plenty of detail, I use "Cyko" Normal Matte.

In closing, I wish to impress one very important thing in flower photography, and that is *simplicity*. You will find that a spray of two or three flowers will not only be more artistic but more pleasing to the eye, as well as more easily handled than the bouquet or a big bunch of a dozen flowers or more. The eye is easily distracted by a dozen or more flowers, as it wanders from one to another in a vain effort to "take them all in," and yet the same bouquet, if broken in groups, or the same dozen divided into three or four sprays, will hold the attention of a critic by its simplicity. So again let me suggest to you that "Simplicity" in flower studies is far more pleasing and effective as well as more easy in the handling and lighting.



FOXHUNTERS PREPARING TO START.

HARRY D. WILLIAR.



THE NEW MAGAZINE.

FRED. RADFORD.



THE BELLE OF THE CANAL.

HENRY ERLE COOPER.

SPECIALISM AND SPECIAL SUBJECTS

By HENRY ERLE COOPER.

THE average photographer is constantly yearning for "fresh fields and pastures new"; the subjects within his reach lose interest, and he feels that it is only over the hills and far away, or in distant lands, that he can secure subjects for the camera that will give results that are worthy of his energy and ability. Yet what a mistake this is; it is the old story of eyes and no eyes, or of the man who went through the wood looking for a straight stick and finally emerged at the other side and had to be content with a crooked one. The most important thing is to train and educate oneself to see the beauty and charm of the subjects with which we are surrounded, and make the most of our opportunities which occur daily rather than reserve our energies for the annual holiday.

when, after rushing half across a continent and exposing a gross of plates, we return to discover that most of the results are ordinary, containing little artistic merit. Later in the season, at the annual exhibition, we see our friend Brown walk off with the first prize for a clever study done down by the old mill stream, or a picture full of mist and atmosphere taken on a foggy day in a back street where the old tumble-down houses show the marks of time and weather, which we had never observed until so cleverly portrayed.

The lesson of all this is to seek out and study the material within our reach, and to make the best of it. One desirable point is to specialise in our work, and not to fritter away our energies and plates on every subject that catches the eye. The photographer who exclusively devotes himself to church architecture, or say figure studies, will in time produce results far more meritorious than the one who mixes up churches and babies with sea-scapes and cattle studies.

Again, much more pleasure is to be obtained in seeking out one's work along definite lines than in going forth camera in hand and no special subject in view. I have already attempted to show that no necessity exists to wander far afield for material or subjects. In years gone by I have travelled to Holland to photograph the Dutch in their old-fashioned costumes only to discover that they were difficult to find, and elusive when found; lately my friends have been doing the same thing, and whilst they have been so doing I have discovered that on our own canals, the forgotten waterways that flow through our land, there are figure studies to be obtained of the barge folk that are no less picturesque than the inhabitants of the Zuyder Zee. In England, at any rate, they are a class by themselves; their distinctive costume and head-dress making them suitable subjects for camera study. Moreover, the stiffness and self-consciousness which is so fatal in figure studies does not often trouble barge folk, whose outdoor life and occupation rob them of nervousness. It is among the women folk that the best subjects will be found, their dress being more distinctive and picturesque than that of the men.

In actual work it will be found best to make set studies, with a little careful posing, rather than attempt "snap-shots," which from an artistic standard are seldom satisfactory, and then

being only a matter of luck have no claim to merit. To get permission to pose them will depend on the photographer's tact and ability to "blarney." It must be also remembered that barge folk have no time to give to a photographer when they are en route or travelling, and it is only when they are resting, or stopping at locks and tunnels that the chance of introducing oneself and making exposures will occur. The offer of copies to be sent on afterwards will generally be sufficient inducement to secure the necessary consent to pose. The promise of copies is one that should not be forgotten, as it is not pleasant to meet with a refusal on the ground that "a man who promised me last time never sent them."

In suggesting canal life or barge folk as a subject to specialize on, I am only throwing out one suggestion. There are many other occupations and subjects, some of them rapidly disappearing, that will equally well lend themselves to artistic treatment.



NEARING THE FOLD.

DR. GEO. C. BULL.



THE GREAT WHITE WAY.

W. H. BROADWELL.

NIGHT PHOTOGRAPHY

By W. H. BROADWELL.

IN last year's ANNUAL I tried to illustrate some of the possibilities of night photography. This note is intended as supplementing that article, in which I stated that gas or electric lights should not be included prominently in the view if it were possible to avoid them. Usually the device is employed of getting a tree or pole or similar obstacle between the prominent lights in the picture and the lens.

Last January the special illumination of the main street of our town—an attempt to create a "Great White Way"—produced a night scene of great brilliancy and attraction. In photographing this scene, I necessarily had to disregard my former advice about lights in the field of view, and my experience may be worth recording. The principal illumination of the street was by means of great flaring arcs of nine thousand candle power, yellowish in color. In my exposure, the

nearest light was only fifty feet away. The accompanying picture shows what I got. It is less objectionable on the score of halation than a dozen other photographs by as many different photographers which I have seen since this was made. This photograph was given an exposure of three minutes, five by seven plate, with an eight by ten Collinear lens, stopped down to U. S. 16. I tried both Lumière and Cramer Crown plates, but the latter, although backed, gave me more halation than the former.

The spots of light extending across the plate in rows are incandescent lights strung from trolley poles. Owing to the passing cars, the lights bobbed up and down during the exposure, giving an elongated spot of light as shown. At the time of making the exposure—7 P. M.—it was impossible to give more than a minute's exposure at one time because of the number of cars passing. The little group of lights in the distance is part of the decoration of a tower on one of the street corners.




GATEWAY: LEICESTER
HOSPITAL—WARWICK.

R. S. BRUCE.

WASHING FOR PERMANENCY

By GEORGE D. JOPSON.

 HERE is no doubt about the fact that the loose method of washing prints so generally adopted is responsible for much of the fading of photographs prevalent today. After the prints are fixed it is so easy to place them in a tray or washing box and go about some other duties, returning in an hour or so to dry and mount the presumably washed prints. Or, they are taken out of the washing box and dried in the blotting books now so widely used.

A few weeks ago an amateur, known to me as a careful and skillful workman, called my attention to what looked like hypo spots and other signs of deterioration in his prints. He insisted that he always washed his prints very thoroughly and afterwards flattened them between the leaves of a blotting book. Upon examination, the blotting book was found to contain a great deal of hypo, doubtless absorbed or taken up from imperfectly washed prints. This amateur now washes his prints by hand, following the method now to be described, and I hear no more complaints from him about fading.

Hyposulphite of soda is a heavy substance. When we place prints full of fixing solution into the washing box and turn on the water, the soda or fixing salt does not necessarily wash out, but settles to the bottom. If there is a opening at the bottom of the washing box then the fixing salt will have a chance to get away. But prints will often mat together while washing, especially those with a gelatine surface, thereby holding much hypo between the surfaces. Then there are other defects in washing boxes which are left to their own devices, contributing in various ways to imperfect washing and lack of permanency in prints. The surest and safest method is to transfer the prints one by one from tray to tray, holding the prints by the corner and allowing all surplus water to drip off during the transfer. In this way the hypo solution is re-

moved from the print. The two trays used in this way should be thoroughly rinsed with the hand before being filled with clean water at each transfer. By repeating this cleansing operation and transfer eight or nine times, taking care to rinse off the prints before placing into each change of water, the prints will receive a much more thorough washing than is possible in a washing box under the tap, even if two hours be given to the job.

It is only with such careful procedure as this that the blotting books sold for flattening and drying unmounted photographs are at all safe. To place in these books prints which are imperfectly washed is simply to create a storehouse of hypo and trouble.




THE WHITE OWL.

OLIVER G. PIKE, F.Z.S., F.R.P.S.

COMMERCIAL PHOTOGRAPHY

By GEORGE RADCLIFFE.

N response to the editor's request for something practical I venture to send a few hints from my work in photographing bottles, china, silverware and the like, as possibly helpful to some brother photographer facing the occasional job of this kind from a local factory.

In photographing bottles it is often desired to have the bottles stand out against a perfectly white ground. The old-fashioned way of doing this was to block out the background in the negative, but this requires a steady hand and patient work. My method is to set a sheet of ground glass in any convenient window and use this for the background, taking care that the bottles are properly lighted from the direction which will give me the modeling necessary. Where a window cannot be had I have substituted a sheet of white cardboard as the background, illuminating this by the reflection of a mirror.

When the oval or round surfaces of bottles act as mirrors and reflects the images of things in front, such as the sash bars of the skylight when photographing in a studio, a screen of tracing cloth placed between the camera and the objects which are reflected will obviate this trouble. By a little care along this line it is possible to avoid harsh lights and the various kinds of images which one often sees reflected in photographs of highly polished objects.

In making photographs of chinaware for commercial uses, it is necessary to preserve not only the design but the form and all the details of the subjects. The best way of doing this is to make use of movable shelves lined and edged with black velvet on which the articles to be photographed are arranged so as to show their points. The illumination should be secured by light filtered through tracing cloth which will obviate



THE WILLOWS.

Fedora E. D. Brown.

20



SCENES IN A JAPANESE POTTERY.

HAROLD M. BENNETT.

1. Wiring the design on Cloisonne ware.

2. Drop by drop the wire is filled with colored sand, which is fused by the fire beneath to form the enamel.

3. Carving a small figure in clay to ornament a piece of Makuzo ware.

4. Decorating Makuzo ware.

reflections and soften the shadows. An orthochromatic plate with a color filter is necessary for all work of this kind where we have to deal with color. A fairly long focussed lens should be used so as to secure correct drawing and modeling. A wide angle lens will not give true images.

In photographing cut glass the stand with movable shelves already mentioned is exceedingly useful. In order to secure brilliance and to lighten up the design in a piece of cut glass the illumination should come from above. The exposure should be employed and in order to avoid flatness I employ a strong developer, using as little solution as is possible, by which I get a negative crisp in detail and yet without any trace of harshness in the contrasts.

My preference in plates for work of this kind is Standard Orthonon. Where there is danger of halation I back my plates using for this an excellent mixture recommended by J. H. McFarland, as follows: Shake one-half ounce powdered castile soap in ten ounces of alcohol repeatedly until partly or fully dissolved. As soon as half the soap has been taken up by the alcohol the solution is ready for use. Filter off two ounces of this soap solution and add to it ten grains of erythrosin and ten grains of aurin, which will dissolve promptly. Paint the backs of the plates with this in a very faint red light taking care to keep the backing from the face of the plate. My plan is to coat a pair of plates just as I take them from the plate box without exposing the plate at all. When ready for development wipe the backing off the plate with a wad of wet cotton and rinse the whole plate carefully in a tray of clean water.



WOODLAND AND STREAM.

A. TAUXE.



Copyright, 1903, by W. B. Child

SURF.

PHOTOGRAPHING CLOUDS

By G. COBB SMITH.



MY experience during the summer in attempting to secure the beautiful cloud forms which are spread forth before us day by day persuade me that some few notes on this interesting branch of photography may be acceptable to my fellow workers.

H. P. Robinson in his various works in pictorial photography was, I think, the first to urge upon photographers the importance of the sky as an aid in landscape composition. Since his day photographers have given more and more attention to the subject. Now that we have plates corrected for color reproduction, with filters adjusted to give the most delicate gradations of color contrast in our subjects, the obtaining of sky and landscape together is a comparatively simple matter.

There are several methods of obtaining clouds on the plate with the foreground by mechanically cutting off a portion of the light from the sky in making the exposure. One method is to use the focussing cloth in the place of shutter or lens cap, raising it quickly in front of the lens to make the exposure, and then lowering it slowly in order to cut off the light from the sky while still exposing the foreground. Or by setting the shutter wide open the lens cap can be used in the same way, treating its top edge as a pivot and raising it slowly from the bottom, thus partially shielding the upper portion of the lens during the exposure. Another and more certain method advocated by O. I. Yellott some years ago, and one which I have used with satisfaction, is to employ a curtain or roller blind shutter, such as the Thornton-Pickard. With this the subject is first focussed on the ground glass, and then the blind of the shutter is lowered until it shuts off the view down to the horizon. The distance to which the blind has been lowered is then carefully noted. The shutter is set and

the greater portion of the exposure made by pulling the shutter string or release to that distance, a short auxiliary exposure being then given the sky before concluding the exposure. There is also a studio shutter having hinged flap which may be raised or lowered at any desired speed. This with the foregoing method is only useful where the horizon is distant or presents an approximately unbroken line.

Presuming a color sensitive plate of medium rapidity with a light yellow screen adjusted to the plate, the detail of exposure in cloud photography need not present much difficulty after the first few experiments. The worker should make several trial exposures with the screen in place until he learns the approximately correct exposure for ordinary clouds under normal conditions. With this normal exposure in mind it will be a simple matter to vary for changing conditions. Averaging my exposures during the summer I find that my normal exposure in cloud work was one-tenth of a second, with f/16 and Cramer's Iso plates, with adjusted filter. With very brightly lighted clouds at midsummer my exposures were reduced as far as zero $1/200$ of a second, while in photographing clouds at sunset I have often given a second or more. Of course, in attempting cloud-scapes with heavy foregrounds as, for example, sunset over a range of hills, we are obliged to expose regardless of the clouds, giving the foreground the exposure it requires.

A great deal depends upon the depth of the screen or color filter used. With a very light screen, such as the old Ideal, it may be desirable to stop the lens to f/45 and give a normal exposure of one-twenty-fifth of a second.

In the development of cloud negatives especially, where color plates and filters are used, the tank method is altogether preferable. Where this is not available the normal developing solution should be diluted with an equal bulk of water and the development stopped short of what would be considered normal density for the average outdoor subject. By this plan, as in tank development with shortened time factor, we get cloud negatives of such a density as to give a slight tone over the whole sky in the print. Harshness of contrast or too realistic modeling should be avoided in cloud photography at all costs.



THE WHISTLING BOY.

HENRY HALL.

It will sometimes happen, no matter how much care has been taken in handling a subject combining clouds and foreground on one plate, that the two portions of the view do not print up in proper relation. This may be corrected by reducing the density of the sky, the best reducer for this purpose being ammonium persulphate. This is used in a three or four per cent solution, its action being arrested by immersing the negative at the right point in a ten per cent solution of sodium sulphite, after which the plate should be well washed.

Another method, but one which requires some skill in handling, is to reduce the sky locally by the use of potassium ferricyanide. First soak the negative to be reduced in a solution of hypo soda made up by dissolving one ounce of hypo soda in fifteen ounces of water. Then go over the sky portion of the negative carefully with a tuft of cotton or soft brush carrying a weak solution of potassium ferricyanide, say 5 grains. to 2 ounces of water. Hold the plate in the hand with the sky portion lower than the rest of the subject while swabbing it with the ferricyanide, and wash the plate in running water as quickly as the proper amount of reduction is seen to be secured.



ST. LUKE'S SUMMER (The Tate Gallery, London).

BASIL SCHON.

THE DEVELOPMENT OF SNOW PICTURES

By GEORGE FERGUSON.



THE most difficult part of making snow pictures comes in the development of the negatives. How to get the crispness of newly fallen snow, and to keep the delicate gradations of light and shadow without overmuch hardness or overmuch softness, presents about as difficult a problem as I have yet found in photography.

My experience leads me to believe that a method of double development is best suited to the average snow scene. For the first development I prefer a dilute developer as follows: Metol 30 grains, hydroquinone 30 grains, dissolved in 20 ounces of water; then add 1 ounce sodium sulphite (crystals) and $\frac{3}{4}$ of an ounce sodium carbonate (crystals). Of this stock solution I take two ounces and add four ounces of water if there are no very heavy masses of dark in the foreground of my picture, or eight ounces of water if the subject has these dark masses. One drop of a ten per cent solution of potassium bromide to each ounce of developer solution used seems to counteract any tendency to fog. After the plates are almost completely developed in this solution I examine them and if they show any signs of flatness I finish the development in a developer of normal strength made up by taking two ounces of the stock solution and adding only two ounces of water to it. Those who find this double method too tedious may try as an alternative the use of rodinal developer made up as follows: rodinal 1 part, water 40 parts.

The principle here is to use the dilute developer until the detail is well up in shadow and by use of the second or normal developer, either local or over the whole plate, to bring up the snow until it reaches good printing density without hardness. In attempting local work on a negative in this way, my plan is to use a wad of absorbent cotton soaked in strong

developer, and then rub this over the portions of the negative which need density while the whole negative is under the surface of the dilute developer. This renders the local work under better control and prevents any lines, streaks, and the like.

I have also used pyro with tank development for much of my snow photography, but I invariably take the plates out of the tank as soon as I have secured the desired amount of detail and then finish them in a developer of normal strength, just to get crispness in the high lights of the subject and good printing density throughout the negative. Many writers have advocated the use of orthochromatic or non-halation or backed plates for this class of work, but I have never found these necessary. With correct exposure or ample exposure and restrained development in two solutions of different strength as given above, the ordinary plate will give results which leave nothing to be desired.




GOLD FISH.

C. P. CLARKE.

THE DARK ROOM TABLE

By IRVING A. GREER.

OUBTLESS most of the readers of the "Annual" have little or no dark room experience. At least not in the old-fashioned dark room with its eternal slop and muss. But the commercial worker and the professional may be glad to know of a method of preparing the top of a dark room work table so that it will be practically impervious to the action of chemicals and readily kept clean. The method I give was published some years ago in one of the technical journals and has given me complete satisfaction in practical use.

First prepare the following solutions: No. 1: Iron sulphate, 4 parts; copper sulphate, 4 parts; potassium permanganate, 8 parts; water, q.s., 100 parts.

No. 2: Aniline, 12 parts; hydrochloric acid, 18 parts; water, q.s., to make 100 parts.

Take a stout brush and give the table two coats of Solution No. 1; apply the solution hot—the second coat as soon as the first is dry. After these two coatings have thoroughly dried the table should be rubbed down with fine glass or sandpaper. Then give it two coats of Solution No. 2, letting the surface of the wood dry thoroughly before applying the second coat. After a few hours the coated surface will appear of a rich black color. It should now receive a coating of raw linseed oil applied with a cloth and well rubbed in. This oil may be diluted with turpentine if desired and after a few applications the surface of the table will take on a dull polish.

A dark room table treated in this way may be readily cleaned by washing with water or suds when the day's work is done and the occasional application of a coat of oil will keep it in excellent order.



MAX SCHNEID.

HOME INTERIORS

By R. B. GREENE.



PART from the questions of illumination and exposure, the chief things to be considered in getting homelike views of rooms of an ordinary house are the lens, plate, height of camera and point of view and the general arrangement of the room. A discussion of these points may be useful to many readers of the "Annual" who, like myself, have tried the home interior and failed to get attractive or satisfying results.

The amateur is generally obliged to make the best he can of the apparatus he has. Where choice is possible, however, a square bellows view camera is preferable to a hand camera for interior work. The rising and falling front and some sort of a level or plumb indicator will be useful. If we are going to use an extreme wide angle lens then the camera should have a baseboard which folds down at the front or a device for bringing the camera body forward on its base, to prevent the front of the baseboard intruding upon the field of the lens. If the camera is fitted with a tapered or conical bellows, as most hand cameras are, care must be taken to secure the first few folds of the bellows well forward by fastening them to the front board, so that they will not obstruct the image on its way to the film or plate.

The focal length of the lens is important because on the relation of its focal length to the base measurement to the films or plate used depends the amount of view included in the picture. This is known as the angle of view, and may be ascertained by dividing the base measurement of the plate by the equivalent focus of the lens. Hand camera lenses for 4 x 5 pictures generally have a focal length of 6¼ inches. This includes a medium angle of view. For interiors of small rooms or wherever this space is confined a special wide angle lens is

preferable, say a lens of about $3\frac{1}{2}$ inches focus for the 4 x 5 picture, which will include everything within an angle of over twenty degrees. Further than this it is not desirable to go.

Because of the difficulty of halation and harsh light contrasts which we often meet with in the home interior the film is preferable to the plate for this kind of work, unless we want to go to the trouble of using non-halation plates or of backing such plates as we use.

Having given these things attention we come to the point of view from which the negative is to be made. If the characteristic picture of the room can be had without including windows in the view this should be chosen as offering a more harmonious negative. Sometimes an open door revealing another room will help the general effect in a view or it may be that we can work from this adjoining room to better advantage in securing our view of the particular room in hand. Doors out of the field of view which open into other rooms well lighted should be open during the exposure in order to give such extra illumination as they can provide. Care should be taken, however, that the different sources of illumination do not cast opposing shadows across the field of view. Where only a part of a room can be included in the room, as when we use narrow angle lenses, care should be taken to see that no prominent piece of furniture is cut in half by the edge of the picture or it will appear to be inadequately supported. Similarly, we should avoid placing large or dark pieces of furniture too near the camera and, as far as possible, dark objects should be so placed as to be well lighted, light objects being placed in the darkest places. In small views of the average room the general impression is that the room is over-crowded with furniture. Before we begin to photograph, therefore, superfluous pieces may be removed with advantage, as the suggestion of space will make the apartment look more roomy. No stiff or formal arrangement of an interior should be attempted, however. The rooms of a home look best in pictures as we see them in everyday life. But a little observation before exposure will often reveal possible improvements. Some sign of life is generally desirable; a piece of music at the open piano, a violin with its bow, or in a bedroom a pair of my lady's slippers will give the effect desired.

The height of the camera should not be overlooked. If it is placed too high the lines of the floor will convey the impression of a slope. Thus, in a room of ordinary size the lens should not be more than forty inches from the floor.

If it is desirable to include a figure in an interior view, we must use a lens which will permit of a short exposure without sacrificing the definition. This means an anastigmat working at $f/6.8$ or better. Needless to say the figures should be so placed as to receive abundant illumination. If at all possible the figure should convey the sense of suspended action. The lady of the house sitting with her sewing basket on her lap or, seated at the piano with one hand apparently turning the page of music, are suggested as examples. Children at their games on the floor of a living room often give charming pictures of home life. With a quick lens, and especially with a reflex camera, these little home groups do not present extraordinary difficulty. The points are to flood the apartment with light (even sunlight filtered through white cheese cloth) and to let the children play their game within a limited area where they will be abundantly lighted.

Simplicity in arrangement will give charm where ornateness of decoration will give only the appearance of a furniture emporium. One of the most charming home interiors I have seen is a picture of a daintily furnished living room, with a little tot of four years standing on a hassock, with her little plump arms squarely raised on the window sill and her nose pressed against the window pane, "Watching for Papa."



GIPSY CAMP.

Russell Burchall.





THE VETERAN.

EDGAR A. COHEN.

SIMPLE WEIGHING AND MEASURING

By E. A. TURNER.

WAS there ever a combination capable of creating more trouble or causing more waste of time than: Grains, scruples, drams, ounces, pounds? Suppose we are told to make up a developer as follows: metol, 7 grains; hydroquinone, 30 grains; sodium sulphite, 150 grains; sodium carbonate, 200 grains; water, 10 ounces. For the metol it is simple enough to take 5 and 2-grain weights for the 7 grains, but for the hydroquinone, we do not find enough grain weights in the average amateur outfit to make 30. So we go back to first principles and say to ourselves, "20 grains make 1 scruple, 3 scruples make 1 dram." 30 grains will make one scruple and 10 grains or $1\frac{1}{2}$ scruples. We therefore take the scruple weight and the half scruple weight to get the 30 grains hydroquinone.

Sodium sulphite, 150 grains; what shall we do with that? 1 dram = 3 scruples, or 60 grains. $150 \text{ grains} \div 60 = 2$ drams and 30 grains, or 2 drams, $1\frac{1}{2}$ scruples. And the carbonate goes the same way, only worse. Is not this a great deal of trouble to spend in simply compounding 10 ounces of developer? It is when you consider that there is a very much simpler way of doing it and so getting rid of all the trouble.

Suppose we change our formula into metric measures; then it will read: water, 300 cubic centimeters; metol, .5 gram; hydroquinone, 2 grams; sodium sulphite, 10 grams; sodium carbonate, 13 grams. There will be no calculation, the weights .5, 2, and 10 grams will be secured by single weights found in any metric outfit. For the 13 grains we will have to use simply a 10, a 2 and a 1-gram weight. The 300 cubic centimeters are just as easily measured in the metric graduate as ounces are in the usual 2 or 4-ounce graduate.



THE OLD CANAL.

TH. G. SORENSSEN.

This is not a new-fangled system. The millions of people in France and Germany use this metric system altogether. The only reason why we still use the old system, adopted with other English traditions, is because we are accustomed to it, and because millions of dollars' worth of valuable tools in our workshops would be made useless by a change in our system of weights and measures.

But this need not deter the photographer from purchasing a set of metric weights and a metric graduate, thus, at the cost of a few cents, ridding himself forever of the bondage of these miserable grains, scruples, drams, ounces and pounds.

A set of metric weights running from .01 gram ($1/100$ gram) to 20 grams will be found most convenient for ordinary work, and the most useful size of graduate is one holding 100 cubic centimeters (c.c.). The tall cylindrical graduate used by chemists is more accurate than the tumbler and bell-shaped graduates commonly sold.

In changing from the old system to the new the formula will have to be changed; to do this, simply remember that 15 grains = 1 gram, and 30 grains = 1 ounce. These are not exact equivalents, but they are quite near enough for all practical purposes. Thus, in converting the formula already given we proceed as follows

| | |
|----------------------|--|
| Metol..... | 7 grains $\div 15 = .5$ gram; |
| Hydroquinone. | 30 grains $\div 15 = 2$ grams; |
| Sodium sulphite..... | 150 grains $\div 15 = 10$ grams; |
| Sodium carbonate.... | 200 grains $\div 15 = 13$ grams; |
| Water..... | 10 ounces $\times 30 = 300$ cubic centimeters. |

Now that the formula is converted into metric measure notice how easy it is to change it for any desired quantity of a developer. Thus, for one-fourth the quantity called for by the formula we proceed as follows

| |
|---------------------------------|
| .5 gram $\div 4 = .12$ gram; |
| 2 grams $\div 4 = .5$ gram; |
| 10 grams $\div 4 = 2.5$ grams; |
| 13 grams $\div 4 = 3.25$ grams; |
| 300 c.c. $\div 4 = 75$ c.c. |

Or for doubling the quantity of the original formula :

$$\begin{array}{l} .5 \text{ gram} \times 2 = 1 \text{ gram;} \\ 2 \text{ grams} \times 2 = 4 \text{ grams;} \\ 10 \text{ grams} \times 2 = 20 \text{ grams;} \\ 13 \text{ grams} \times 2 = 26 \text{ grams;} \\ 300 \text{ c.c.} \times 2 = 600 \text{ c.c.} \end{array}$$

If this, simple as it is, looks complicated to the reader let him compare the old and the new system by trying to divide an old-way formula by 4 and he will very quickly come to the conclusion that life is too short for such an unnecessary calculation. And the metric system saves time wherever there is weighing or measuring. Suppose that we desire to make a ten per cent. solution of potassium bromide. Perhaps our bottle will hold about 40 cubic centimeters. Just take $40 \div 10 = 4$ grams of potassium bromide, dissolve in, say 30 c.c. of water, pour this solution into the graduate and add more water to make the solution 40 c.c. And 50 or 60 c.c. is just as simple to make up. We simply use 5 or 6 grams of the bromide as the case may be.

Again, suppose that we desire to add 100 drops of ten per cent. bromide to a stock-solution developer, there is no need to count out the hundred. 20 drops, as dropped from an ordinary fountain-pen filler, are equal to 1 cubic centimeter. So, for 100 drops we simply measure out 5 c.c. of our ten per cent. solution.

To get accustomed to grams, just think of a gram as a dollar represented by the usual sign, 1.00; and 10 grams as ten dollars, 10.00; .1 (1/10 gram) as a dime, 10 cents, .10; and .01 (1/100 gram) as a cent, .01. As a matter of fact a hundredth part of a gram is called a centigram, and a tenth of a gram a decigram.

A cubic centimeter is a gram of water. It is the measure of the amount of water that weighs a gram, so 100 c.c. of water = 100 grams weight.

After having used the metric system for some years in making up photographic solutions the writer finds it painful, when occasionally he is compelled to convert a formula and use apothecaries' weight.



WILLOW BROOK.

FLORA M. COLMAN.

GLYCERINE DEVELOPMENT FOR PLATINOTYPES

By G. H. HUTCHINS.

NOT long ago we were all aflame with enthusiasm about the then newly discovered method of modifying platinum prints in development by the use of glycerine. This method, like platinum printing itself, seems to have gone out of fashion, but it affords so many ways of obtaining individual effects in platinum prints, and of suiting the print to the subject, that it should not be allowed to become obsolete.

In my work with the process I follow the method so clearly laid down by the originator of the process, Mr. Joseph T. Keiley in his monograph, "The Camera Notes Improved Glycerine Process." As this monograph is now diffi-

cult to obtain, I venture to repeat the essential details in the hope that some of the readers of the "Annual" will be induced to try this beautiful method. It is not altogether simple and requires an appreciation of the sense of color in monochrome; but with a little discriminating taste and some practice it gives results which are well worth the trouble.

The essential idea of the process is that glycerine mixed with the developer will act as a restrainer, thus making possible the control of the action of the developer. The developer modified with glycerine is applied locally and in such strength that we can absolutely control the progress and amount of development in any portion of the print, even to the extent of removing all trace of the image at will.

The outfit required comprises a set of brushes: a broad soft brush for use with pure glycerine, a narrower brush with which to brush the developer over the print, smaller brushes for local application, and one very fine brush for special touches of developer where necessary. Three jars are required for the glycerine and developing solutions, one for pure glycerine, another for normal strength developer, and a third for the mixed solution of glycerine and developer. A good-sized piece of plate glass, say, 10 x 12 inches, on which to place the print for development, and a supply of clean blotters about the size of the print to be manipulated should be at hand.

For ordinary use prepare two developing solutions, one of the normal strength platinum developer, the other made up of two parts normal strength developer, and one part glycerine, thoroughly mixed. For convenience in use these should be placed in shallow wide-mouthed glass jars, with a few ounces of pure glycerine in a third jar. The usual three baths of clearing solution should also be kept at hand when working.

Suppose we have a platinum print which we desire to modify by this process. First, coat the back of the print with glycerine so that it will adhere to the plate glass upon which it is placed back down. Now brush over the face of the print with glycerine—a very thin coating. The mixed solution of glycerine and developer is now applied to the face of the print with a clean brush, the development of the dif-

ferent portions of the subject being pushed or held back according to the effect desired.

If, during the process of development, the appearance of the image proceeds too rapidly, the face of the print should be thoroughly blotted with a piece of clean blotting paper and then recoated with another thin coating of glycerine, making the coating somewhat thicker over those portions where sufficient development has already taken place.

By careful experimenting in this way with a few prints, the reader will quickly be able to see the possibilities of the method, and to restrain or prevent the appearance of any desired portion of the picture, such as objects or accessories which do not help the composition or can be dispensed with to the advantage of the picture.

Of course, care should be taken not to work too vigorously upon the surface of the paper in the application of the developer so as to destroy the normal finish of the paper. As soon as the print has been developed to the degree desired it should be at once transferred to the usual clearing baths. In the washing of glycerine-developed prints, the prints should not be permitted to remain any longer than is necessary in the washing waters since the surface of the print is already somewhat softened by the manipulation during development. Let the washing be done carefully and as quickly as possible. Those who have not yet tried this method will be agreeably surprised by its simplicity when once the technique has been mastered and by the remarkable variety of effects which it makes possible.



BELLE JOHNSON.

THE CRYSTOLEUM PICTURE

By FREDERICK ROGERS.



NE hears little about the crystoleum process of coloring photographs nowadays, but the trouble I had in finding a reliable method some time ago gives me the thought that a brief résumé of the process may be useful to some readers of the "Annual."

The process may be described in very few words. The most favorable kind of photograph for crystoleum coloring is one which has good contrasts.

It must be understood that all dark shadows give but little color in the finished picture, therefore it will be obvious that hard black and white pictures are not always suitable ones to use. The crystoleum glasses may be obtained at any artists' supply store. Small sizes are the best to try upon first; the glasses are sold in pairs. When obtained, and the photograph chosen, the glasses must be carefully cleaned, and the photograph, which should be as near as possible the same size as the glass, may be put into water to soak. Obtain some white starch, break it up into powder, mix it up with cold water, and put it on the gas-stove, or Bunsen burner, as the case may be, in an enamelled saucepan and thicken by boiling, gently stirring during the process. This must be tempered to the consistency of treacle, but on no account to be as stiff as a jelly. When the starch is ready, it may be used hot or cold. The wet print is damped off with a cloth or plotting paper, and the picture side must receive a good coating of the starch, and also one of the glasses upon the concave side. Putting it on with the finger is best. See there are no air-bells, as it is the absence of these, and any foreign matter, that goes to make the mounting a success. Now the print is taken and laid face down in concave side of the glass. The fact of having a flat print to mould, so to speak, into a square bevel is as bad as fitting

a round nut in a square hole, but the fact of having to properly mount the two in contact is the difficulty. The glass will not give, therefore the print must be gradually moulded into it, commencing from the center, and working outwards, carefully examining the work to see that a clean contact is being made. To bring the print and glass into contact properly, after the print has been placed in the bevel, a piece of greased paper is laid over it, and with the butt handle of a knife—or a very good use can be put to a worn-out tooth brush, by breaking off the worn-out brush and using the butt end—by placing in the center of the glass with greased paper, having the glass upon a cushion so as to prevent any breakage, rubbing in circles until the edges are reached. If this is done properly, and the print has not dried too quickly, the two will be found in good contact and pretty free from the so-called glistening spots and air-bells, which is one of the chief things to avoid. When everything has so far been accomplished, the glass must be put on one side to get thoroughly dry.

The next stage is rendering the picture transparent. There are several methods of doing this, but, to be satisfactory, the paper must be taken away as much as possible. This is best done by using a series of fine glass papers and rubbing it away until you come to the picture. Keep this rubbing as even as possible, and do not have it too patchy; at the same time, be careful not to rub through to the glass and so spoil the picture, as the thinner you get the paper, the more delicate the operation becomes. Above all, do not hurry. You will soon see when enough has been rubbed away, from the picture showing through.

This finished, the picture is made transparent. Some recommend castor oil, others wax, and several mixtures are offered for the purpose. One chief point to avoid is the browning effect that takes place after some little time, which spoils the picture. I have always found spermacetti a most excellent medium for the purpose; although more expensive than some wax, a little goes a long way. The glass should be made quite hot over a gas burner. Hold it with an American clip. When fairly hot (be careful not to burn it), rub it with a piece of the wax until the picture will take up

no more, then wipe the edges, and go over the back with a piece of cotton wool or clean cloth and get an even coating of wax over the back of the print. When it has set it will be found not quite so transparent as when warm, but it should be thin enough to allow one to see the proper boundary lines for the coloring.

The colors to be used are oil colors, and in thinning the different colors use a clear medium, and colorless, if possible. The coloring is done without any due regard being taken of the shadows, as all this exists in the photograph, but due allowance must always be made for the depth of color. They always appear, and perhaps this is one of the points that makes the process so enticing; the wax surface acting as a screen to any vivid color that may be used, which causes an opacity to exist and softening the raw color. For the rendering of flesh tints the second glass is always used, and it is this trick that sets the uninitiated wondering very often how the results are produced, and there are many who do not suspect the existence of the second glass at all.

It would be a difficult matter to try and give the reader any hints as to coloring, except that, when once the colors are decided upon, they are simply laid on the back of the picture, mosaic fashion, and allowed to dry. In painting any figures, all flesh tints are left out on the front glass, the eyes, lips, and cheek tints only being put in, the flesh tint being painted upon the second glass afterwards in the proper position. When the whole is dry, all that is necessary is to mount them up by binding the whole together at the edges with paper. Landscapes treated in this way do not always come up to one's expectations when finished, and this is very often the cause of the subject not being a suitable one, many colors being dark in the photograph. No amount of color at the back will bring them up. In attempting landscapes, the sky generally comes well on the second glass, and the combination is good if a suitable cloud negative is prepared for it and properly painted up.



"ROWENA."

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FAILURES AND REMEDIES IN BROMIDE ENLARGING

By R. E. TUBBS.



HERE is no lack of instruction about the making of bromide enlargements. But in the doing of the thing one meets with many difficulties and failures which are not mentioned in the text books. Perhaps the recital of a few of these, with possible remedies, may be acceptable.

A common fault in enlargements as made by beginners is that they are too contrasty; the whites are chalky and the shades are inclined to be sooty. The cause may be a too dense negative or under-exposure in making the enlargement. One remedy is to reduce the negative by the use of the ammonium persulphate reducer. A more tedious but surer way is to make a new negative with less contrast by means of a soft transparency made from the original negative. Under-exposure in enlarging is best remedied by a new enlargement with the correct exposure.

Another fault frequently met with is white or uneven marking on the enlargement. This may be caused by the developer not flowing quickly and evenly over the whole surface of the paper. It occurs usually in making enlargements of large size. The remedy, especially if we are using rough paper, is to thoroughly wet the whole sheet of paper before development.

Most workers who make enlargements are troubled with blisters at one time or another. As a rule, these result from sudden changes of temperature in the developer or fixing bath or washing water. If these are kept at a normal temperature of say 65 degrees, blisters will rarely occur. When they do appear transfer the enlargement to an alum hardening bath. Prick the bubbles after washing and before laying the print on blotting paper or hanging it to dry.

Unevenness in the density of the image, where it is evident that the enlargement has been properly exposed, may be caused by some obstruction behind the negative if a daylight enlarger is used; or, if artificial light is employed, by the light not being properly centered. The remedy in either case is obvious.

Lack of sharpness of definition in an enlargement may result from the same lack in the original negative, defective focusing, or by shaking the enlarging apparatus during the exposure. For the first defect there is no remedy, but enlargements which are unsharp from the second or third causes mentioned may be remedied in a new enlargement by seeing that the apparatus is firmly fixed during exposure and the use of some sharp mark on the negative by which to focus the enlarged image more accurately.

These are all little points but they cover many troublesome hours in my experience and I hope that their publication here may help someone to avoid unnecessary waste of time.



L'ENTRÉE DU BOIS.

A. GOMEZ GIMENO.



PORTRAIT.

C. C. KOUGH.

American Annual Formulary

In the following section we have gathered together a typical collection of Formulæ and Tables, which will assist the photographer in his every day work. It will be noticed that makers' formulæ are omitted. These can best be obtained by direct application to the makers. The appended formulæ are selected from the working methods of practical photographers.—Editor.

DEVELOPERS FOR NEGATIVES.

Dry Pyro (Fairman). A developer for those who develop at irregular intervals.

1.—Dissolve 1 ounce of sodium sulphite in 3 ounces of distilled water heated to boiling point, and when the salt is dissolved add water to make up solution to 4 ounces. Keep in a well-corked 4-ounce bottle, labeled sodium sulphite 1:4.

2.—Dissolve 1 ounce of sodium carbonate in 3 ounces of hot water, make up to 4 ounces of solution and label carbonate of soda, 1:4.

3.—Dissolve 1 ounce of potassium bromide in 9 ounces of cold water, add water to make up the solution to 10 ounces and label potassium bromide 1:10. Keep on hand an ounce of dry pyro. When ready to develop, take a 6-ounce graduate with measures marked in drams and ounces. Pour into this $\frac{1}{2}$ ounce of the sulphite solution; dissolve in it 5 grains of pyro; add 3 drams of carbonate solution and 5 drops of potassium bromide 1:10. Add water to make the developing solution up to 5 ounces in winter time, or 6 ounces in summer time.

Pyro Soda (Mellen). No. 1.—Water, 20 ounces; sodium sulphite (crystals), 4 ounces; carbonate of soda, 2 ounces. Dissolve the sulphite first and then add the carbonate.

No. 2.—Water, 6 ounces; pyro, 1 ounce. For correct exposures take 1 dram of No. 2; 1 ounce of No. 1, and add 2 ounces of water. For snapshots, or plates thought to be under-exposed, use 1 dram of No. 2; $1\frac{1}{2}$ drams of No. 1, and 6 ounces of water. For over-exposure take 2 drams of No. 2, 1 ounce of No. 1 and 6 ounces of water. Or, instead of the 2 drams of No. 2 in this solution use 1 dram of No. 2 and 10 drops of a 10 per cent. solution of potassium bromide.

Metol (Wenzel). No. 1.—Metol, 30 grains; potassium metabisulphite, 10 grains; potassium bromide, 5 grains; water, 5 ounces.

No. 2.—Sodium sulphite, 240 grains; sodium carbonate, 240 grains; water, 5 ounces. 1 and 2 combined form a one-solution developer for normal exposures. For use as a two-solution developer, for normal exposures take of No. 1, 1 part; No. 2, 1 part; and water, 1 to 2 parts, according to the assumed degree of under-exposure. For over-exposures take of No. 1, 2 parts; No. 2, 1 part; and add 10 per cent. solution of potassium bromide as required.

Hydroquinone (Shoemaker). No. 1.—Hydroquinone, 123 grains; sodium sulphite (crystals), 1,000 grains; bromide of potassium, 3 grains; water, 16 ounces. Dissolve the hydroquinone in 6 ounces of

the water; in the remaining 10 ounces dissolve the sulphite and bromide; combine the two solutions in one bottle and label "stock solution."

No. 2.—Water, 10 ounces; caustic soda, 180 grains. For correct exposure use 3 ounces of No. 1, $\frac{1}{2}$ ounce of No. 2, and add 1 ounce of water. For over-exposure dilute this solution with 2 ounces of water.

Ortol (Pentlarge). No. 1.—Water, 1 ounce; metabisulphite of potash, 4 grains; ortol, 8 grains.

No. 2.—Water, 1 ounce; sodium sulphite, 48 grains; carbonate of potassium, 16 grains; carbonate of soda, 32 grains. Add a drop or two of a 10 per cent. solution of bromide of potassium. For correct exposure mix No. 1 and No. 2 and dilute with an equal bulk of water. For under or over-exposure, add less or more water than equal bulk of Nos. 1 and 2 combined.

Metol-Hydroquinone for Orthochromatic Plates.—Water, 20 ounces; metol, 14 grains; potassium metabisulphite, 18 grains; hydroquinone, 56 grains; sodium sulphite, 1 ounce; sodium carbonate, $1\frac{1}{4}$ ounces. Use 1 drop of a 10 per cent. potassium bromide solution to each ounce only if necessary.

Adwrol. No. 1.—Water, 10 ounces; sodium sulphite, $1\frac{1}{4}$ ounces; adurol, 85 grains.

No. 2.—Water, 10 ounces; potassium carbonate, $1\frac{1}{4}$ grains. For average outdoor exposures use equal quantities Nos. 1 and 2; for fully timed exposures take 1 ounce each of No. 1, No. 2, and water.

Amidol. A concentrated developer.—Water, 13 ounces; sodium sulphite (crystals), $2\frac{1}{2}$ ounces; when dissolved add amidol, $\frac{1}{4}$ ounce. The solution keeps fairly well in bottles completely full and well corked. For use take 1 ounce of the concentrated solution and dilute with 3 or 4 ounces of water.

Rodinal. A single solution developer.—For normal exposures dilute 1 part of Rodinal with 20 parts of water; for over-exposure rodinal, 1 part; water, 10 to 20 parts; and a liberal dose of a 10 per cent. solution of potassium bromide; under-exposure, rodinal, 1 part; water, 20 to 40 parts. For uncertain exposures begin with rodinal, 1 part; water, 25, and when the character of the exposure is indicated transfer the plate to rodinal solution of the strength required.

FIXING BATHS.

Plain Fixing Bath.—Dissolve 1 pound of sodium hyposulphite in 2 quarts of water or 4 ounces of the hypo in a pint of water, according to the bulk of the solution required.

Acid Fixing Bath (Carbutt).—Sulphuric acid, 1 dram; sodium hyposulphite, 16 ounces; sodium sulphite, 2 ounces; chrome alum, 1 ounce; warm water, 64 ounces. To prepare the bath, dissolve the hypo in 48 ounces of water; the sodium sulphite in 6 ounces; mix the sulphuric acid with 2 ounces of the water and pour slowly into the sulphite solution, and then add to the hypo solution. Dissolve the chrome alum in 8 ounces of water; add to the bulk of the solution and the bath is ready for use.

INTENSIFICATION.

Mercuric Chloride Process. No. 1.—Mercuric chloride, 200 grains; bromide of potassium, 120 grains; water, $6\frac{1}{2}$ ounces.

No. 2.—Sodium sulphite, 1 ounce; water, 4 ounces. The well-washed negative, free from hypo, must be thoroughly bleached in No. 1; well washed; and then blackened in No. 2. After blackening it is well washed again.

REDUCTION.

Farmer's Reducer.—Dissolve 1 ounce of potassium ferricyanide in 9 ounces of water and make up to 10 ounces, forming a ten per cent.

solution. Label this poison. Thoroughly wet the negative to be reduced. Take enough fresh plain hypo fixing bath for the purpose, and add to it enough of the ferricyanide solution to make it a light straw color. The negative to be reduced is immersed in this solution, when it will be seen to lose density. Rock the tray to insure evenness of action. This reducer can also be used for local treatment.

Ammonium Persulphate.—Prepare a solution in the following proportions: Ammonium persulphate, 15 grains; water, 1 ounce. The solution should be made just before use. The negative must be perfectly free from hypo or it will be stained by the persulphate. When the desired reduction has been reached, transfer the negative without washing to a 10 per cent. solution of anhydrous sodium sulphite. Wash finally for 15 or 20 minutes.

CLEARING STAINED NEGATIVES.

Acid Alum.—Dissolve $\frac{1}{8}$ th of an ounce of pulverized alum in 20 ounces of water and add 1 dram of sulphuric acid. Immerse the stained plate in this solution for a few minutes; remove plate, wash, and then set in the rack to dry.

PRINTING PROCESSES.

Carbon Tissue, Sensitizer for (Bennett).—Potassium bichromate, 4 drams; citric acid, 1 dram; strong ammonia water, about 3 drams; water, 25 ounces; dissolve the bichromate and citric acid in hot water, and add sufficient ammonia to change the orange color of the solution to lemon-yellow. Sensitize for 90 seconds; reducing the water softens the gradation in the print; increasing it to 30 ounces gives more vigor.

Kallitype Sensitizer for Black Tones (Thomson).—Distilled water, 1 ounce; ferric oxalate (Merck's or Mallinckrodt's), 15 grains; citrate of iron and ammonia (brown scales), 25 grains; chloride of copper, 8 grains; oxalate of potassium, 35 grains; oxalic acid, 15 grains; silver nitrate, 15 grains; gum arabic, 10 grains.

Developer.—Distilled water, 1 ounce; silver nitrate, 40 grains; citric acid, 10 grains; oxalic acid, 10 grains.

Blue Printing Sensitizing Formula (Brown). A.—Dissolve 110 grains ferric ammonium citrate (green) in 1 ounce of water.

B.—Dissolve 40 grains of potassium ferricyanide in 1 ounce of water. These two solutions are made up separately in any desired quantity with the proportions given. They are then mixed together and kept in a stoneware bottle, but the single solution should always be filtered before use. The mixture will retain its good qualities for months if kept from the light.

(*Millen*).—Potassium ferricyanide, 1 ounce; ammonia-citrate of iron, $1\frac{1}{2}$ ounces; distilled water, 10 ounces. Mix thoroughly and filter. The solution should have a deep wine color and dry on the paper a lemon-yellow. If the solution is green and has a precipitate, the ammonio-citrate is old and spoiled, or you have been given plain citrate of iron. The mixture should be kept from the light by placing the bottle in a light tight tin or similar container.

(*Nicol*). A.—Ammonio-citrate of iron, 3 ounces; water, 4 ounces.

B.—Potassium ferricyanide, $2\frac{1}{4}$ ounces; water, 4 ounces. Just before using mix together one part each of A and B and add two parts of water.

Bromide Paper Developers: Hydroquinone-metol. No. 1.—Water, 10 ounces; hydroquinone, 52 grains; potassium metabisulphite, 18 grains; sodium sulphite, 5 drams; sodium carbonate, $1\frac{1}{4}$ ounces.

No. 2.—Water, 10 ounces; metol, 30 grains; sodium carbonate, 5 drams; sodium sulphite, 5 drams. One or two drops of a potassium bromide ten per cent. solution added to 1 ounce of the mixed developer will increase contrast and keep the whites pure. Equal parts

of 1 and 2 give excellent prints from a normal negative; one part of 1 and two of 2 give gray prints with maximum half-tone and gradation; two parts of 1 and one of 2 give vigorous prints from soft delicate negatives.

Amidol for rich blacks (freshly prepared). Distilled (or boiled) water, 4 ounces; sodium sulphite (crystals), 90 drams; amidol, 10 to 15 grains. Add a drop of 10 per cent. bromide solution to each ounce of developer.

Bromide Prints: Toning Formula for Sepia Tones: Hypo Alum.—Hyposulphite of soda, 5 ounces; ground alum, 1 ounce; boiling water, 70 ounces. Dissolve the hypo in the water, and then add the alum slowly. A milk-white solution results which should be decanted when clear. It is not used until cold (about 60 deg. Fahr.).

Sulphide of Sodium.—The fixed and washed print is treated with one of the following solutions: (1) Potassium ferricyanide, 10 grains; potassium bromide, 10 grains; water, 1 ounce; or (2) potassium ferricyanide, 20 grains; sodium chloride (common salt), 30 grains; water, 1 ounce. The image will be bleached by either of these solutions in a few minutes, the whitish appearance of the deposit being caused by its change into a salt of silver. After 5 minutes in running water apply the sulphuretting solution: Dissolve 3 ounces of sodium monosulphide in 15 ounces of water; boil the solution for about 10 minutes, filter off the black precipitate formed, and when cooled make up to 25 ounces with water. To tone, take 12 per cent. stock sodium sulphide solution, 1 ounce; water, 12 to 20 ounces.

Red Tones: Copper.—Dissolve 100 grains of ammonium carbonate in 2 ounces of water, and in this solution dissolve 10 grains of sulphate of copper. Then add 20 grains of potassium ferricyanide. A clear, dark green solution results which gives a red-chalk tone in about three minutes. Tone until the deepest shadow is converted, and then wash the print for ten minutes.

Green Tones: Vanadium.—Bleach print in the following: Potassium ferricyanide, 10 grains; ammonium carbonate, 100 grains; water, 1 ounce. Wash well and apply: Ferric chloride, 2 grains; vanadium chloride, 2 grains; ammonium chloride, 4 grains; hydrochloric acid, 5 minims; water, 1 ounce.

Blue Tones: Iron.—Bleach print in: Potassium ferricyanide, 10 grains; ammonium carbonate, 100 grains; water, 1 ounce; then tone in ferric chloride, 5 grains; hydrochloric acid, 5 minims; water, 1 ounce.

Gum Bichromate (Caspar Millar). A.—Gum arabic, $1\frac{1}{4}$ ounces; water, $3\frac{1}{2}$ ounces; salicylic acid, 4 grains.

B.—Chrome alum, 45 grains; water $3\frac{1}{2}$ ounces. Grind A and B with water and pigment, brush over paper, dry and store.

Suggested formula.—A, 2 ounces; B, $1\frac{1}{2}$ drams; carbon black, 10 grains; sensitize for 2 minutes in 5 per cent. bichromate solution.

Platinum: Sensitizing Gold Bath and Sepia Papers. A.—Chloroplatinite of potassium, 15 grains; distilled water, 90 minims.

B.—Ferric oxalate, 21 grains; oxalic acid, 2 grains; distilled water, 183 minims. For cold bath paper, mix A and B, and add 15 minims of water. For sepia paper mix A and B and add 15 minims of a 5 per cent. solution of mercuric chloride. The addition of a few grains of potassium chlorate to any of the above gives increased contrast in the print. From 140 to 170 minims of solution are sufficient to coat a sheet of paper 20 x 26 inches.

Platinum Prints: to Intensify. A.—Sodium formate, 45 grains; water, 1 ounce.

B.—Platinum perchloride, 10 grains; water, 1 ounce.

C.—For use, take 15 minims each of A and B to 2 ounces of water. Immerse prints until sufficiently intensified, then remove and wash.

Gold toning.—For blue-black tones, for slight strengthening, and for converting rusty black into pure black. Soak print in warm water, lay on warm glass, brush over glycerine and blot off. Pour on few minims of solution of gold chloride (1 grain per dram), and rapidly brush in all directions. When toned, rinse, and sponge back and front with: Metol, 50 grains; sodium sulphite, 1 ounce; potassium carbonate, $\frac{1}{2}$ ounce; water, 20 ounces. Tone in daylight. Do not tone sepias or old prints in this solution.

Platinum Prints: to Distinguish from Bromide.—Soak the print in saturated solution of mercuric chloride: a platinum print will not change; a bromide print will bleach.

MISCELLANEA.

Substitutes for Ground Glass. 1.—Paraffin wax makes an excellent substitute for ground glass if the latter should get broken. Iron the paper on to a sheet of plain glass. It is more transparent than the focusing screen and the image will appear clearer; hence, in exposing allowance must be made for the difference in illumination.

2.—Resin dissolved in wood alcohol and blown over the glass; this must not be scratched; it gives a very fine-grained ground glass effect.

3.—White wax, 120 grains; ether, 1 ounce.

Varnish for Negatives and Lantern Slides.—Dissolve 1 part of gun sandarac in 25 parts of benzole. Apply cold.

Backing Mixture.—Dissolve a 4-ounce stick of licorice in 8 ounces of water with the aid of gentle heat. When dissolved rub into the mixture 1 ounce of burnt sienna in powder, using the back of a spoon for this purpose. When cold, bottle for use.

Retouching Mediums. (1.)—Pure alcohol, 2 parts; sandarac, 1 part; benzine, 4 parts; acetone, 4 parts.

(2.)—A simpler medium is made by dissolving a little resin in turpentine.

Adhesive for Labels.—Soak 1 part of the best glue in water until thoroughly swollen, add a little sugar candy, 1 part of gum arabic and 6 parts of water. Boil with constant stirring over a spirit lamp until the whole gets thin. Coat sheets of paper with it; let dry and cut up into convenient sizes.

Protective Varnish for Labels.—Use waterproof ink when writing on the paper. Dry, and coat with the following varnish: Cut into fine shreds an old celluloid negative film from which all traces of gelatine have been removed. Put the shreds in a small bottle; half fill with amyl acetate and then add wood alcohol or methylated spirit, which will dissolve the celluloid.

Stains: to Remove from the Hands.—Developer stains: solution of citric or oxalic acid. Silver nitrate stains: Water, 4 ounces; chloride of lime, 350 grains; sulphate of soda, 1 ounce. Apply with a brush.

Tarnished Daguerreotypes, to Restore.—Remove the silvered plate from the case and place it, image uppermost, under a box lid or other protector from dust, etc. Put a small piece of potassium cyanide into a graduate and pour over it one or two ounces of water. Hold the daguerreotype by the corner with a pair of pliers, rinse it in clear running water, then pour over it the weak cyanide solution (a 3 per cent. solution is usually employed), and return it to the graduate. Repeat this operation several times until the discoloration quite disappears. Wash well in running water, and then, before the surplus water has time to collect in tears upon the image, begin to dry the plate gradually over a spirit lamp, holding the plate in an inclined position so that it will dry from the uppermost corner. The secret of success is in the use of pure water for the final washings and the drying of the image without check or the formation of tears.

Poisons and Antidotes.—Administer the antidote as soon as possible. If a strong acid or alkali, or cyanide of potassium, has been swallowed, lukewarm water in large quantities should be swallowed at once. Where strong acids or alkalies have not been swallowed, rid the stomach of the poison by vomiting; for this purpose take 25 grains of zinc sulphate in warm water.

Polished Surfaces: to Photograph.—Smear the surface with soft putty so as to deaden the reflections. Photograph the article against a black background, and stop off all reflections, allowing the light to come from one direction only. To photograph hollow cut glassware fill with ink or aniline black water dye. Before photographing machinery deaden the bright parts with putty.

Hardening Negatives.—Immerse them for a few minutes in formalin, 1 ounce; water, 30 ounces.

Stained Fingers.—Stains arising from development generally disappear if the fingers, before they have dried, be rubbed with a crystal of citric acid.

Lens: to Clean.—The lens should always be kept free from dust or other impurities. To clean it, spread upon a table a clean sheet of paper; take the lens apart, and with a camel-hair brush dust each of the combinations on both sides. If the surfaces of the lenses are very dirty and have lost their polish, make up the following: Nitric acid, 3 drops; alcohol, 1 ounce; distilled water, 2 ounces. Dip a tuft of filtering cotton in this solution, rub each side of the lens, then polish with an absolutely clean chamois. Clean the lens tube before replacing the lenses, each of which should be finally dusted with a camel-hair brush.

Blackening Brass.—Make two solutions: Copper nitrate, 200 grains; water, 1 ounce. Silver nitrate, 200 grains; water, 1 ounce. Mix the solutions; clean the article well; dip it in the solution for a moment; withdraw it; dry it; and heat it strongly.

Black, Dead, for Wood.—Shellac, 40 parts; borax, 20 parts; glycerine, 20 parts; water, 500 parts. When dissolved, add 50 parts aniline black.

Film: to Remove from Glass. Make two solutions. A.—Sodium fluoride, 6 grains; water, 4 ounces.

B.—Sulphuric acid, 6 drops; water, 1 ounce. Place the negative in solution A for two minutes and then place directly in solution B. After another two minutes lift the film with the finger from one corner of the plate. It will soon leave the glass.

THE ELEMENTS:

THEIR NAMES, SYMBOLS, AND ATOMIC WEIGHTS.
OXYGEN STANDARD.

Compiled by HENRY F. RAESS.

| | | | | | |
|------------------|--------|-----------------|--------|-----------------|--------|
| Aluminium.....Al | 27.1 | HYDROGEN....H | 1.008 | Rubidium.....Rb | 85.4 |
| Antimony.....Sb | 120.2 | Indium.....In | 114 | Ruthenium....Ru | 101.7 |
| Argon.....A | 39.9 | Iodine.....I | 126.85 | Samarium.....Sm | 150 |
| ARSENIC.....As | 75.0 | IRIDIUM.....Ir | 193.0 | Scandium.....Sc | 44.1 |
| Barium.....Ba | 137.4 | Iron.....Fe | 55.9 | Selenium.....Se | 79.2 |
| Bismuth.....Bi | 208.5 | Krypton.....Kr | 81.8 | Silicon.....Si | 28.4 |
| Boron.....B | 11 | Lanthanum....La | 138.9 | SILVER.....Ag | 107.88 |
| BROMINE.....Br | 79.96 | Lead.....Pb | 206.9 | SODIUM.....Na | 23.06 |
| Cadmium.....Cd | 112.4 | LITHIUM.....Li | 7.03 | Strontium....Sr | 87.6 |
| Cesium.....Cs | 132.9 | Magnesium...Mg | 24.36 | SULPHUR....S | 32.06 |
| Calcium.....Ca | 40.1 | MANGANESE...Mn | 55.0 | Tantalum....Ta | 183 |
| CARBON.....C | 12.00 | MERCURY.....Hg | 200.0 | Tellurium....Te | 127.6 |
| Cerium.....Ce | 140.25 | MOLYBDENUM..Mo | 96.0 | Terbium.....Tb | 160 |
| Chlorine.....Cl | 35.45 | Neodymium...Nd | 143.6 | Thallium....Tl | 204.1 |
| Chromium....Cr | 52.1 | Neon.....Ne | 20 | Thorium.....Th | 232.5 |
| COBALT.....Co | 59.0 | Nickel.....Ni | 58.7 | Thulium.....Tm | 171 |
| Columbium...Cb | 94 | Nitrogen.....N | 14.04 | TIN.....Sn | 119.0 |
| Copper.....Cu | 63.6 | Osmium.....Os | 191 | Titanium....Ti | 48.1 |
| Erbium.....Er | 166 | OXYGEN.....O | 16 | TUNGSTEN..W | 184.0 |
| Fluorine.....F | 19 | Palladium....Pd | 106.5 | Uranium.....U | 238.5 |
| Gadolinium...Gd | 156 | PHOSPHORUS..P | 31.0 | Vanadium....V | 51.2 |
| Gallium.....Ga | 70 | Platinum.....Pt | 194.8 | Xenon.....Xe | 128 |
| Germanium...Ge | 72.5 | Potassium....K | 39.15 | YTTERBIUM..Yb | 173.0 |
| Glucinum....Gl | 9.1 | Praseodymium.Pr | 140.5 | YTRIUM.....Yt | 89.0 |
| Gold.....Au | 197.2 | Radium.....Rd | 225 | Zinc.....Zn | 65.4 |
| Helium.....He | 4 | RHODIUM.....Rh | 103.0 | Zirconium...Zr | 90.6 |

TABLE OF COMPARATIVE PLATE SPEED
NUMBERS.

| H & D. | Watkins P No. | Wynne F No. | H & D | Watkins P No. | Wynne F No. |
|--------|------------------|----------------|-------|------------------|----------------|
| 10 | 15 | 24 | 220 | 323 | 114 |
| 20 | 30 | 28 | 240 | 352 | 120 |
| 40 | 60 | 49 | 260 | 382 | 124 |
| 80 | 120 | 69 | 280 | 412 | 129 |
| 100 | 147 | 77 | 300 | 441 | 134 |
| 120 | 176 | 84 | 320 | 470 | 138 |
| 140 | 206 | 91 | 340 | 500 | 142 |
| 160 | 235 | 103 | 380 | 558 | 150 |
| 200 | 294 | 109 | 400 | 588 | 154 |

The above Watkins and Wynne numbers are equivalent to the H and D, only when the latter is determined in accordance with the directions of Hurter and Driffeld, that is with pyro-soda developer and using the straight portion only of the density curve.

To convert H and D into Watkins:—Multiply H and D by 50 and divide by 34. For all practical purposes the Watkins P number is 1½ times H and D.

To convert Watkins into Wynne F Nos.:—Extract the square root and multiply by 6.4.

The above methods have been approved by the Watkins Meter Company and the Infalible Exposure Meter Company.

**TABLES OF DISTANCES AT AND BEYOND WHICH ALL
OBJECTS ARE IN FOCUS WHEN SHARP FOCUS
IS SECURED ON INFINITY.**

| Focal length of Lens in inches | Ratio marked on Stops | | | | | | | | | | | | | | |
|---|---|-------|-----|-----|-----|------|------|------|------|------|------|------|------|------|--|
| | f/4 | f/5.6 | f/6 | f/7 | f/8 | f/10 | f/11 | f/15 | f/16 | f/20 | f/22 | f/32 | f/44 | f/64 | |
| | Number of feet after which all is in focus. | | | | | | | | | | | | | | |
| 4 | 33 | 24 | 22 | 19 | 17 | 13 | 12 | 9 | 8 | 7 | 6 | 4 | 3 | 2 | |
| 4½ | 38 | 27 | 25 | 21 | 19 | 15 | 14 | 10 | 10 | 7 | 7 | 5 | 3½ | 2½ | |
| 4¾ | 42 | 30 | 28 | 24 | 21 | 17 | 15 | 11 | 11 | 8½ | 7½ | 5½ | 4 | 3 | |
| 5 | 47 | 34 | 31 | 27 | 24 | 19 | 17 | 12 | 12 | 9½ | 8½ | 6 | 5 | 3 | |
| 5½ | 52 | 36 | 35 | 30 | 26 | 21 | 19 | 14 | 13 | 10½ | 9½ | 6½ | 5½ | 3½ | |
| 5¾ | 57 | 40 | 38 | 33 | 28 | 23 | 21 | 15 | 14 | 11½ | 10½ | 7 | 5½ | 3½ | |
| 6 | 63 | 45 | 43 | 36 | 31 | 25 | 23 | 17 | 15 | 12½ | 11½ | 7½ | 6 | 4 | |
| 6½ | 68 | 50 | 46 | 38 | 34 | 27 | 25 | 18 | 17 | 13½ | 13 | 8½ | 6½ | 4 | |
| 6¾ | 75 | 54 | 50 | 42 | 38 | 30 | 28 | 20 | 19 | 15 | 14 | 9 | 7 | 4½ | |
| 7 | 81 | 58 | 54 | 46 | 40 | 32 | 29 | 22 | 20 | 16 | 15 | 10 | 7½ | 5 | |
| 7½ | 87 | 62 | 58 | 50 | 44 | 35 | 32 | 23 | 22 | 17½ | 16 | 11 | 8 | 5½ | |
| 8 | 94 | 67 | 63 | 54 | 47 | 38 | 34 | 25 | 24 | 19 | 17 | 12 | 8½ | 6 | |
| 8½ | 101 | 72 | 68 | 58 | 51 | 40 | 37 | 27 | 25 | 20 | 18 | 12½ | 9 | 6 | |
| 9 | 109 | 78 | 73 | 62 | 54 | 44 | 39 | 29 | 27 | 22 | 20 | 13½ | 10 | 6½ | |
| 9½ | 117 | 83 | 78 | 64 | 58 | 47 | 42 | 31 | 29 | 24 | 21 | 14½ | 10½ | 7 | |
| 10 | 124 | 90 | 83 | 71 | 62 | 50 | 45 | 33 | 31 | 25 | 22 | 15½ | 11 | 7½ | |
| 10½ | 132 | 96 | 88 | 76 | 68 | 52 | 48 | 36 | 32 | 28 | 24 | 16 | 12 | 8 | |
| 11 | 141 | 100 | 94 | 80 | 71 | 56 | 51 | 37 | 35 | 29 | 25 | 17½ | 12½ | 8½ | |
| 11½ | 150 | 104 | 100 | 84 | 76 | 60 | 56 | 40 | 38 | 30 | 27 | 19 | 13½ | 9 | |
| 12 | 156 | 111 | 104 | 89 | 78 | 63 | 57 | 42 | 39 | 32 | 29 | 20 | 14 | 10 | |
| 12½ | 168 | 120 | 112 | 96 | 84 | 67 | 61 | 45 | 42 | 34 | 31 | 21 | 15 | 10½ | |
| 13 | 180 | 127 | 116 | 101 | 90 | 71 | 65 | 47 | 45 | 35 | 32 | 22 | 16 | 11 | |
| 13½ | 190 | 133 | 125 | 107 | 95 | 75 | 68 | 50 | 47 | 37 | 34 | 24 | 17 | 12 | |
| 14 | 197 | 141 | 131 | 118 | 99 | 79 | 72 | 52 | 50 | 39 | 36 | 25 | 18 | 12½ | |
| 14½ | 208 | 148 | 140 | 120 | 104 | 83 | 75 | 55 | 52 | 42 | 38 | 26 | 19 | 13 | |

If sharp focus is secured on any of the distances shown, then, with the stop indicated, all objects are in focus from half the distance focused on up to infinity.

**LENGTH OF STUDIO.
REQUIRED FOR LENSES OF DIFFERENT FOCAL
LENGTHS. FROM 6 TO 8 FEET IS ALLOWED FOR
THE CAMERA AND OPERATOR.**

From "Photographic Lenses" by BECK and ANDREWS.

| Focus of Lens | Size | Kind of Portrait | Length of Studio | Dist. of Lens from Object |
|------------------|---|---------------------|---------------------|------------------------------|
| Inches | | | In Feet | In Feet |
| 6 | Carte de Visite 3½ x 4½..... | Full Length | 18 to 20 | 11 to 12 |
| 7½ | Carte de Visite..... | Full Length | 22 to 25 | 14 to 15 |
| 8½ | Carte de Visite..... | Full Length | 24 to 28 | 17 to 19 |
| 9½ | Cabinet and smaller groups.... | Bust..... | 10 to 15 | 5 |
| | | Full Length | 20 to 23 | 12 to 13 |
| | | Bust..... | 12 to 17 | 7 |
| 11 | Cabinet and 5 x 7 groups..... | Full Length | 25 to 30 | 17 to 18 |
| | | Bust..... | 13 to 20 | 8 |
| 14½ | Cabinets, panels and 6½ x 8½ groups..... | Full Length | 32 to 40 | 23 to 24 |
| | | Bust..... | 14 to 20 | 7 |
| 19 | 10 x 12 portraits or groups.... | Full Length | 20 to 25 | 13 |
| | | Bust..... | 14 to 20 | 7 |
| 24 | 16 x 20 portraits or groups.... | Full Length | 25 to 30 | 14 |
| | | Bust..... | 14 to 20 | 8 |

TABLE FOR CALCULATING DISTANCES IN ENLARGING OR REDUCING.

From The British Journal Photographic Almanac.

| FOCUS OF LENS | TIMES OF ENLARGEMENT AND REDUCTION | | | | | | | |
|---------------|------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Inches | 1 Inch | 2 Inches | 3 Inches | 4 Inches | 5 Inches | 6 Inches | 7 Inches | 8 Inches |
| 2 | 4 4 | 6 3 | 8 2½ | 10 2½ | 12 2½ | 14 2½ | 16 2½ | 18 2½ |
| 2½ | 5 5 | 7½ 3½ | 10 3½ | 12½ 3½ | 15 3 | 17½ 2¾ | 20 2½ | 22½ 2¾ |
| 3 | 6 6 | 9 4½ | 12 4 | 15 3¾ | 18 3¾ | 21 3½ | 24 3¾ | 27 3¾ |
| 3½ | 7 7 | 10½ 5½ | 14 4¾ | 17½ 4¾ | 21 4½ | 24½ 4½ | 28 4 | 31½ 3¾ |
| 4 | 8 8 | 12 6 | 16 5½ | 20 5 | 24 4¾ | 28 4¾ | 32 4¾ | 36 4½ |
| 4½ | 9 9 | 13½ 6½ | 18 6 | 22½ 5½ | 27 5½ | 31½ 5½ | 36 5½ | 40½ 5½ |
| 5 | 10 10 | 15 7½ | 20 6½ | 25 6½ | 30 6 | 35 5½ | 40 5½ | 45 5½ |
| 5½ | 11 11 | 16½ 8½ | 22 7½ | 27½ 6½ | 33 6½ | 38½ 6½ | 44 6½ | 49½ 6½ |
| 6 | 12 12 | 18 9 | 24 8 | 30 7½ | 36 7½ | 42 7 | 48 6¾ | 54 6¾ |
| 7 | 14 14 | 21 10½ | 28 9½ | 35 8½ | 42 8½ | 49 8½ | 56 8 | 63 7½ |
| 8 | 16 16 | 24 12 | 32 10½ | 40 10 | 48 9½ | 56 9½ | 64 9½ | 72 9 |
| 9 | 18 18 | 27 13½ | 36 12 | 45 11½ | 54 10½ | 63 10½ | 72 10½ | 81 10½ |

The object of this table is to enable any manipulator who is about to enlarge (or reduce) a copy any given number of times to do so without troublesome calculation. It is assumed that the photographer knows exactly what the focus of his lens is, and that he is able to measure accurately from its optical center. The use of the table will be seen from the following illustration: A photographer has a *carte* to enlarge to four times its size, and the lens he intends employing is one of 6 inches equivalent focus. He must therefore look for 4 on the upper horizontal line and for 6 on the first vertical column and carry his eye to where these two join, which will be 30-7 $\frac{1}{2}$. The greater of these is the distance the sensitive plate must be from the center of the lens; and the lesser, the distance of the picture to be copied. To *reduce* a picture any given number of times, the same method must be followed; but in this case the greater number will represent the distance between the lens and the picture to be copied, the latter that between the lens and the sensitive plate. This explanation will be sufficient for every case of enlargement or reduction.

If the focus of the lens be 12 inches, as this number is not in the column of focal lengths, look out for 6 in this column and multiply by 2, and so on with any other numbers.

UNITED STATES WEIGHTS AND MEASURES.
ACCORDING TO EXISTING STANDARDS.

LINEAL.

| | Inches. | Feet. | Yards. | Rods. | Fur's. | Mile. |
|----------------------|----------|---------|---------|-------|--------|-------|
| 12 inches = 1 foot. | 12 = | 1 | | | | |
| 3 feet = 1 yard. | 36 = | 3 = | 1 | | | |
| 5.5 yards = 1 rod. | 198 = | 16.5 = | 5.5 = | 1 | | |
| 40 rods = 1 furlong. | 7,920 = | 660 = | 220 = | 40 = | 1 | |
| 8 furlongs = 1 mile. | 63,360 = | 5,280 = | 1,760 = | 320 = | 8 = | 1 |

SURFACE—LAND.

| | Feet. | Yards. | Rods. | Roods. | Acres. |
|-----------------------------|--------------|-------------|-----------|---------|--------|
| 144 sq. ins. = 1 sq. ft. | 9 = | 1 | | | |
| 9 sq. ft. = 1 sq. yard. | 272.25 = | 30.25 = | 1 | | |
| 30.25 sq. yds. = 1 sq. rod. | 10,890 = | 1,210 = | 40 = | 1 | |
| 40 sq. rods = 1 sq. rood. | 43,560 = | 4,840 = | 160 = | 4 = | 1 |
| 640 acres = 1 sq. mile. | 27,878,400 = | 3,097,600 = | 102,400 = | 2,560 = | 640 |

VOLUME—LIQUID.

| | Gills. | Pints. | Gallon. | Cub. In. |
|----------------------|--------|--------|---------|----------|
| 4 gills = 1 pint. | 32 = | 8 = | 1 = | 231 |
| 2 pints = 1 quart. | | | | |
| 4 quarts = 1 gallon. | | | | |

FLUID.

| Gallon. | Pints. | Ounces. | Drachms. | Minims. | Cubic Centimetres |
|---------|--------|---------|----------|----------|-------------------|
| 1 = | 8 = | 128 = | 1,024 = | 61,440 = | 3,785.435 |
| | 1 = | 16 = | 128 = | 7,680 = | 473.179 |
| | | 1 = | 8 = | 480 = | 29.574 |
| | | | 1 = | 60 = | 3.697 |

16 ounces, or a pint, is sometimes called a fluid pound.

TROY WEIGHT.

| Pound. | Ounces. | Pennyweights. | Grains. | Grams. |
|--------|---------|---------------|---------|--------|
| 1 = | 12 = | 240 = | 5,760 = | 373.24 |
| | 1 = | 20 = | 480 = | 31.10 |
| | | 1 = | 24 = | 1.56 |

APOTHECARIES' WEIGHT.

| lb. | 5 | 3 | 2 | gr. | |
|--------|---------|----------|-----------|---------|--------|
| Pound. | Ounces. | Drachms. | Scruples. | Grains. | Grams. |
| 1 = | 12 = | 96 = | 288 = | 5,760 = | 373.24 |
| | 1 = | 8 = | 24 = | 480 = | 31.10 |
| | | 1 = | 3 = | 60 = | 3.89 |
| | | | 1 = | 20 = | 1.30 |
| | | | | 1 = | .06 |

The pound, ounce, and grain are the same as in Troy weight.

AVOIRDUPOIS WEIGHT.

| Pound. | Ounces. | Drachms. | Grains (Troy). | Grams. |
|--------|---------|----------|----------------|--------|
| 1 = | 16 = | 256 = | 7,000 = | 453.60 |
| | 1 = | 16 = | 437.5 = | 28.35 |
| | | 1 = | 27.34 = | 1.77 |

ENGLISH WEIGHTS AND MEASURES.

APOTHECARIES' WEIGHT.

| | | | | |
|------------|---|-----------|---|--------------|
| 20 Grains | - | 1 Scruple | - | 20 Grains. |
| 3 Scruples | - | 1 Drachm | - | 60 Grains. |
| 8 Drachms | - | 1 Ounce | - | 480 Grains. |
| 12 Ounces | - | 1 Pound | - | 5760 Grains. |

FLUID MEASURE.

| | | |
|-----------|---|-----------------|
| 60 Minims | - | 1 Fluid Drachm. |
| 8 Drachms | - | 1 Fluid Ounce. |
| 20 Ounces | - | 1 Pint. |
| 8 Pints | - | 1 Gallon. |

The above weights are usually adopted in formulas.

All Chemicals are usually sold by

AVOIRDUPOIS WEIGHT.

| | | | | |
|-------------------------|---|----------|---|---------------------------|
| 27 $\frac{1}{4}$ Grains | - | 1 Drachm | - | 27 $\frac{1}{4}$ Grains. |
| 16 Drachms | - | 1 Ounce | - | 437 $\frac{1}{2}$ Grains. |
| 16 Ounces | - | 1 Pound | - | 7000 Grains. |

Precious Metals are usually sold by

TROY WEIGHT.

| | | | | |
|-----------------|---|---------------|---|--------------|
| 24 Grains | - | 1 Pennyweight | - | 24 Grains. |
| 20 Pennyweights | - | 1 Ounce | - | 480 Grains. |
| 12 Ounces | - | 1 Pound | - | 5760 Grains. |

NOTE.—An ounce of metallic silver contains 480 grains, but an ounce of nitrate of silver contains only 437 $\frac{1}{2}$ grains.

UNITED STATES FLUID MEASURE.

| Gal. | Pints. | Ounces. | Drachms. | Mins. | Cub. In. | Grains. | Cub. C.M. | | | | | | |
|------|--------|---------|----------|-------|----------|---------|-----------|--------|---------|------------|------------|----------|--------|
| 1 | - | 8 | - | 1,024 | - | 61,440 | - | 231. | - | 58,328.886 | - | 3,785.44 | |
| | 1 | - | 16 | - | 128 | - | 7,680 | - | 28.875 | - | 7,291.1107 | - | 473.18 |
| | | 1 | - | 8 | - | 480 | - | 1.8047 | - | 455.6944 | - | 29.57 | |
| | | | 1 | - | 60 | - | 0.2256 | - | 56.9618 | - | 3.70 | | |

IMPERIAL BRITISH FLUID MEASURE.

| Gal. | Pints. | Ounces. | Drachms. | Mins. | Cub. In. | Grains. | Cub. C.M. | | | | | | |
|------|--------|---------|----------|-------|----------|---------|-----------|-----------|----------|--------|-------|-----------|---------|
| 1 | - | 8 | - | 160 | - | 76,800 | - | 277.27384 | - | 70,000 | - | 4,543.732 | |
| | 1 | - | 20 | - | 160 | - | 9,600 | - | 34.65923 | - | 8,750 | - | 567.966 |
| | | 1 | - | 8 | - | 480 | - | 1.73296 | - | 437.5 | - | 28.398 | |
| | | | 1 | - | 60 | - | 0.21662 | - | 54.69 | - | 3.550 | | |

"UNIFORM SYSTEM" NUMBERS FOR STOPS FROM $\frac{1}{2}$ TO $\frac{1}{128}$

In the following table Mr. S. A. Warburton calculated the exposure necessary with every stop from $\frac{1}{2}$ to $\frac{1}{128}$ compared with the unit stop of the "uniform system" of the Photographic Society of Great Britain. The figures which are underlined show in the first column what $\frac{1}{2}$ must be in order to increase the exposure in geometrical ratio from $\frac{1}{2}$, the intermediate numbers showing the uniform system number for any other aperture.

| f | U. S. No. | f | U. S. No. | f | U. S. No. |
|----------------|-------------|-------|-----------|-------|-----------|
| <u>1</u> | <u>1</u> | 15 | 14.06 | 58 | 210.25 |
| $1\frac{1}{2}$ | .097 | 16 | 16 | 59 | 217.56 |
| <u>1.414</u> | <u>1</u> | 17 | 18.06 | 60 | 225.00 |
| $1\frac{1}{4}$ | .140 | 18 | 20.25 | 61 | 232.56 |
| $1\frac{1}{2}$ | .191 | 19 | 22.56 | 62 | 240.25 |
| <u>2</u> | <u>1</u> | 20 | 25.00 | 63 | 248.06 |
| $2\frac{1}{4}$ | .316 | 21 | 27.56 | 64 | 256 |
| $2\frac{1}{2}$ | .390 | 22 | 30.25 | 65 | 264.06 |
| <u>2.828</u> | <u>1</u> | 22.62 | 32 | 66 | 272.25 |
| $2\frac{3}{4}$ | .472 | 23 | 33.06 | 67 | 280.56 |
| 3 | .562 | 24 | 36.00 | 68 | 289.00 |
| $3\frac{1}{4}$ | .660 | 25 | 39.06 | 69 | 297.56 |
| $3\frac{1}{2}$ | .765 | 26 | 42.25 | 70 | 306.25 |
| $3\frac{3}{4}$ | .878 | 27 | 45.56 | 71 | 315.06 |
| <u>4</u> | <u>1.00</u> | 28 | 49.00 | 72 | 324.00 |
| $4\frac{1}{4}$ | 1.12 | 29 | 52.56 | 73 | 333.06 |
| $4\frac{1}{2}$ | 1.26 | 30 | 56.25 | 74 | 342.25 |
| $4\frac{3}{4}$ | 1.41 | 31 | 60.06 | 75 | 351.56 |
| 5 | 1.56 | 32 | 64 | 76 | 361.00 |
| $5\frac{1}{4}$ | 1.72 | 33 | 68.06 | 77 | 370.56 |
| $5\frac{1}{2}$ | 1.89 | 34 | 72.25 | 78 | 380.25 |
| <u>5.656</u> | <u>2</u> | 35 | 76.56 | 79 | 390.06 |
| $5\frac{3}{4}$ | 2.06 | 36 | 81.00 | 80 | 400.00 |
| 6 | 2.25 | 37 | 85.56 | 81 | 410.06 |
| $6\frac{1}{4}$ | 2.44 | 38 | 90.25 | 82 | 420.25 |
| $6\frac{1}{2}$ | 2.64 | 39 | 95.06 | 83 | 430.56 |
| $6\frac{3}{4}$ | 2.84 | 40 | 100.00 | 84 | 440.00 |
| 7 | 3.06 | 41 | 105.06 | 85 | 451.56 |
| $7\frac{1}{4}$ | 3.28 | 42 | 110.25 | 86 | 462.25 |
| $7\frac{1}{2}$ | 3.51 | 43 | 115.56 | 87 | 473.06 |
| $7\frac{3}{4}$ | 3.75 | 44 | 121.00 | 88 | 484.00 |
| <u>8</u> | <u>4</u> | 45 | 126.56 | 89 | 495.06 |
| $8\frac{1}{4}$ | 4.25 | 45.25 | 128 | 90 | 506.25 |
| $8\frac{1}{2}$ | 4.51 | 46 | 132.25 | 90.50 | 512 |
| $8\frac{3}{4}$ | 4.78 | 47 | 138.06 | 91 | 517.56 |
| 9 | 5.06 | 48 | 144.00 | 92 | 529.00 |
| $9\frac{1}{4}$ | 5.34 | 49 | 150.06 | 93 | 540.56 |
| $9\frac{1}{2}$ | 5.64 | 50 | 156.25 | 94 | 552.25 |
| $9\frac{3}{4}$ | 5.94 | 51 | 162.56 | 95 | 564.06 |
| 10 | 6.25 | 52 | 169.00 | 96 | 576.00 |
| 11 | 7.56 | 53 | 175.56 | 97 | 588.06 |
| <u>11.31</u> | <u>8</u> | 54 | 182.25 | 98 | 600.25 |
| 12 | 9.00 | 55 | 189.06 | 99 | 612.56 |
| 13 | 10.56 | 56 | 196.00 | 100 | 625.00 |
| 14 | 12.25 | 57 | 203.06 | | |

American Photographic Societies

This list is compiled from information received from an inquiry form sent to over one hundred societies during the latter half of 1909. It includes many societies not given in the 1909 list, but falls short of completeness as a record of the photographic societies of America. Secretaries of societies not here listed are urged to send us particulars of their organizations so that the list may be fully representative of society activities.—Editor.

AKRON CAMERA CLUB—Akron, Ohio. Headquarters, Y. M. C. A. Building. Established 1890. Membership, 50. Date of meetings, second and fourth Tuesday in each month from October to May, inclusive. *President*, William Spanton; *Secretary*, A. S. Hibbs, 358 Dean Street. Date of annual exhibition, February.

AMERICAN FEDERATION OF PHOTOGRAPHIC SOCIETIES—Headquarters, Toledo Museum of Art, Toledo, Ohio. *President*, George W. Stevens, Director Toledo Museum of Art; *Vice-President*, John F. Jones; *Treasurer*, George W. Beatty; *Secretary*, C. C. Taylor, 3223 Cambridge Avenue; *Historian*, William A. Rheinheimer. For the advancement of pictorial photography, encouragement of pictorial workers and development of new talent. To hold an annual International Salon, of the highest class, to be exhibited in the principal American Art Museums and art centers.

AMERICAN INSTITUTE PHOTOGRAPHIC SECTION—New York City. Headquarters, 19—21 West 44th Street. Established March 26, 1899. Stated meetings, first and third Tuesdays of each month. No meetings during Summer months. *President*, Oscar G. Mason; *Vice-President*, Robert A. B. Dayton; *Treasurer*, James Y. Watkins; *Secretary*, John W. Bartlett, M.D., F.R.P.S., 149 West 94th Street.

AMERICAN LANTERN SLIDE INTERCHANGE—New York. Principal office, 361 Broadway. Organized 1885. *General Manager*, F. C. Beach. Membership, 20 clubs. *Board of Managers*, F. C. Beach, New York; Dr. Carlos E. Cummings, Buffalo, N. Y.; O. C. Reiter, Pittsburg, Pa.; H. R. Terhune, Orange, N. J.; Herbert F. Smith, Syracuse, N. Y. Annual meeting, January of each year.

ASSOCIATES IN PICTORIAL PHOTOGRAPHY—Circulates Portfolios to which each member contributes a print each month and criticises those of other members. Twenty-two members. *Director*, William H. Zerbe, 345 Spruce Street, Richmond Hill, L. I.

BOSTON CAMERA CLUB—Boston, Mass. Headquarters, 50 Bromfield Street. Established 1881. Incorporated 1886. Membership, 120. Date of meetings, first Mondays. *President*, P. Hubbard; *Secretary*, John H. Thurston, 50 Bromfield Street. Date of annual exhibition, Spring.

BOSTON YOUNG MEN'S CHRISTIAN UNION CAMERA CLUB—Boston, Mass. Headquarters, 48 Boylston Street, Boston. Organized 1908. *President*, Stephen E. Woodbury; *Vice-President*, Henry C. Shaw; *Secretary and Treasurer*, Wilfred S. White. Meetings held first Tuesday in each month.

BROCKTON CAMERA CLUB—Brockton, Mass. Headquarters, Arcade Building. Established April, 1894. Membership, 50. Date of meetings, third Friday each month. *President*, Wm. F. Bond; *Secretary*, George W. Higgins, 34 Commercial Street, Brockton. Date of annual exhibition, third week in April.

BROOKLYN CAMERA CLUB—Brooklyn, N. Y. Established February 2, 1900. Incorporated February 19, 1900. Headquarters, 776 Manhattan Avenue. Membership, 41. Date of meetings, first Wednesday each month. *President*, Wm. T. Knox; *Secretary*, U. Grant Dodson, 21 Clifford Place, Brooklyn.

BUFFALO CAMERA CLUB—Buffalo, N. Y. Headquarters, Block Building, corner Elmwood Avenue and Utica Street. *President*, James A. Johnson; *Vice-President*, Chas. A. Georger; *Secretary*, William H. Kunz.

CALIFORNIA CAMERA CLUB—San Francisco, Cal. Headquarters, 833 Market Street, San Francisco. Established March 18, 1890. Incorporated April 5, 1890. Membership, 449. Date of meeting, second Tuesday, monthly. Monthly slide exhibitions, every third Friday in the month. Print exhibitions, monthly. Date of annual exhibition, no set time. *President*, Walter A. Scott; *Secretary*, Dr. E. G. Eisen, Phelan Building, San Francisco.

- CAMERA CLUB**—New York. Headquarters, 121 West 68th Street. Established by consolidation of Society of Amateur Photographers and New York Camera Club in April, 1896. Incorporated May 7, 1896. Membership, 225. Date of annual meeting, first Thursday after the first Monday in January. *Secretary*, Harry Coutant.
- CAMERA CLUB OF THE TWENTY-THIRD STREET BRANCH, Y. M. C. A.**—New York. Headquarters, 23rd Street Y. M. C. A. Established June 3, 1904. Membership, 90. Date of business meetings, first Monday in each month; third Monday in each month, socials, lantern slide lectures, etc. *President*, Harold M. Wyckoff; *Vice-President*, J. Ramsperger, Jr.; *Secretary*, J. O. Sprague, 215 West 23rd Street; *Treasurer*, John Downie. Date of annual exhibition, usually in January. No fixed date.
- "CAMERADS"**—New Brunswick, N. J. Headquarters, corner Church and Neilson Streets. Established April 24, 1890. *Secretary*, Harvey Iredell, D.D.S., Lock Box 24, New Brunswick.
- CAMERA WORKERS**—New York. Headquarters, 122 East 25th Street. Organized 1908. This club has no officers, but is managed by an executive committee of its members. The membership is divided into three classes, and limited to 100. *Secretary*, Paul Haviland.
- CAPITAL CAMERA CLUB**—Washington, D. C. Headquarters, 1010 F St., N. W. Established April, 1891. Membership, 102. Date of meetings, second Friday in each month. *President*, Chas. E. Fairman; *Vice-President*, Francis C. Crow; *Treasurer*, Wm. T. Wade; *Secretary*, Wm. E. Adams, 30 T Street, N. E.; *Librarian*, Frank E. Zabel. Date of annual exhibition, May.
- CHICAGO CAMERA CLUB**—Chicago, Ill. Headquarters, Northwestern University Building, Dearborn and Lake Streets. Established February 14, 1904. Incorporated February 19, 1904. Date of meetings, every Thursday. *President*, F. M. Tuckerman; *Secretary and Treasurer*, George C. Elmberger, 20 Gross Street, Jefferson Park, Chicago. Annual exhibition, March (Salon).
- COLUMBIA PHOTOGRAPHIC SOCIETY**—Philadelphia, Pa. Headquarters, 1811 North Broad Street, Philadelphia. Established 1889. Incorporated July 3, 1894. Membership, 150. Date of meetings, first Monday of each month, business meeting; other Mondays, lectures or demonstrations. *President*, Frank D. Long; *Secretary*, Albin F. Voigt, 10th and Green Lane, Philadelphia. Date of annual exhibition, January, prints; November, lantern slide.
- DAGUERRE CAMERA CLUB**—Headquarters, Harbert, Mich. Established 1893. Membership, 20. Date of meetings, first Monday of each month. *President*, F. Blish; *Secretary*, Wells Sizer, Harbert.
- ELMIRA CAMERA CLUB**—Elmira, N. Y. Headquarters, 112 Baldwin Street, Elmira. Established 1902. Membership, 30. *President*, H. T. Stagg; *Secretary-Treasurer*, W. E. Bryan.
- ESSEX CAMERA CLUB**—Newark, N. J. Headquarters, 33 Court Street, Newark, N. J. Established April, 1901. Membership, 75. Date of meetings, fourth Tuesday of every month. *President*, Floyd V. Harper; *Secretary*, L. F. Gebhardt, 235 So. 11th Street. Date of annual exhibition, February.
- HAMILTON SCIENTIFIC ASSOCIATION, CAMERA SECTION**—Hamilton, Can. Headquarters, 104 King Street, W. Established April, 1891. Membership, 80. Date of meetings, second and fourth Mondays. *President*, E. G. Overholt; *Secretary*, Sinclair G. Richardson, 700 Bank of Hamilton Bldg. Date of annual exhibition, last week of November.
- HARTFORD CAMERA CLUB**—Hartford, Conn. Membership, 100. *President*, Dr. Frederic S. Crossfield, 75 Pratt Street; *Secretary*, Mr. Charles R. Nason, 20 Madison Street.
- HAVERHILL CAMERA CLUB**—Haverhill, Mass. Headquarters, Daggett Building, Merrimack Street. Established 1898. Membership, 37 active, 1 honorary. Date of meetings, third Tuesday, monthly. *President*, George S. Nutter; *Secretary*, L. O. Philbrick, 108 Washington Street; *Treasurer*, Vard B. Leavitt. Date of annual exhibition, no set date. Usually in March.
- INTERNATIONAL PHOTOGRAPHIC ASSOCIATION**—San Francisco, Cal. Founded 1908. *President*, F. B. Hinman, Room 4, Union Depot, Denver, Colo.; *Chief Album Director*, J. H. Winchell, R. F. D. No. 2, Painesville, Ohio; *General Secretary*, Fayette L. Clute, 713-715 Call Building, San Francisco; *Stereoscopic Album Director*, Harry Gordon Wilson, 4950 Washington Avenue, Chicago, Ill. The *State Secretaries*: Alabama—Richard Hines, Jr., 153 State Street, Mobile. Colorado—O. E. Aultman, 106 East Main Street, Trinidad. Missouri—Wharton Schooler, R. F. D. No. 2, Eolia. Montana—Mrs. Ludovica Butler, 932 W. Broadway, Butte. Nebraska—Miss Lou P. Tillotson, 1305 South Thirty-second Street, Omaha. New Hampshire—Mrs. A. Leonora Kellogg, 338 McGregor Street, Manchester. North Dakota—Jas. A. Van Kleeck, 619 Second Avenue, North Fargo. Ohio—J. H. Winchell, R. F. D. No. 2, Painesville. South Dakota—C. B. Bolles, L. B. 351, Aberdeen.

- JAMESTOWN CAMERA CLUB**—Jamestown, N. Y. Established 1907. Headquarters, Gifford Building, Jamestown, N. Y. Membership, 30. Meetings, second Tuesday of month. *President*, A. L. Eckstrom; *Vice-President*, Alex. Parsons; *Treasurer*, E. H. Sample; *Secretary*, L. C. Ogren.
- LOS ANGELES CAMERA CLUB**—Los Angeles, Cal. Headquarters, 413 Blanchard Art Building. Organized 1908. *President*, T. M. Jenkins; *Secretary*, T. K. Adlord, 1104 West 42nd Street.
- MISSOURI CAMERA CLUB**—St. Louis, Mo. Club Rooms, Suite No. 26 and 27, Euclid Building. Organized November, 1903. Meetings, first and third Monday. Members American Federation of Photo Societies. *President*, Edward Brown; *Vice-President*, Wm. A. Rheinheimer; *Secretary*, Francis S. Ives; *Treasurer*, Chas. Lindenschmit.
- MONTCLAIR CAMERA CLUB**—Montclair, N. J. Headquarters, 460 Bloomfield Avenue. Established November 10, 1898. Incorporated August 5, 1899. Membership, 65. Date of meetings, second Saturday of each month. Annual meeting, second Saturday in February. *President*, C. C. Stanley; *Secretary*, C. Russell Jacobus, 550 Bloomfield Avenue. Date of annual exhibition, next Fall (date not fixed).
- MONTREAL AMATEUR ATHLETIC ASSOCIATION CAMERA CLUB**—Montreal, Canada. Headquarters, M. A. A. Building, 250 Peel Street. Organized May 1, 1906. Membership, 45. Meetings monthly. *President*, C. Power Cleghorn; *Secretary*, P. S. Robinson, 260 St. James Street; *Treasurer*, Alf. W. Bridgen.
- NEW BRITAIN CAMERA CLUB**—Organized 1892. *President*, G. C. Atwell; *Secretary*, E. A. Sheldon, 53 Lenox Place, New Britain, Conn. Meets second and fourth Tuesdays, 173 Main Street.
- NEW ENGLAND PHOTOGRAPHIC EXCHANGE**—E. A. Sheldon, *Exchange Secretary*, 53 Lenox Place, New Britain, Conn.
- ORANGE CAMERA CLUB**—Orange, N. J. Headquarters, 222 Main Street. Established March 21, 1892. Incorporated May 19, 1893. Membership, 120. Date of meetings, 5th and 20th of each month, except July and August. *President*, Ernest L. Gould; *Secretary*, W. A. Rudstad, 222 Main Street, Orange. Date of annual exhibitions, Fall and Spring.
- OREGON CAMERA CLUB**—Portland, Ore. Established 1895. Incorporated 1903. Headquarters, 207 Park Street. Membership, 140. Date of meetings, second Tuesday in January. *President*, H. G. Thorn; *Vice-President*, B. S. Durkee; *Secretary*, W. E. Roberts; *Treasurer*, C. F. Richardson. Date of annual exhibition, early Spring.
- PEN, PENCIL AND CAMERA CLUB OF PITTSBURG**—Pittsburg, Pa. Headquarters, 805 Home Trust Building. Limited membership of twenty. Waiting list filled. *President*, F. E. Johnson; *Secretary-Treasurer*, R. L. Sleeth, Jr.
- PHOTOGRAPHIC CLUB OF BALTIMORE**—Baltimore, Md. Headquarters, Club House, 847 Hamilton Terrace. Established 1885. Incorporated 1890. Membership, active 52, associate 20, honorary 10, non-resident 3, total 85. Date of meetings, every Tuesday, 8:15 P. M. *President*, Percy M. Reese; *Secretary*, Louis C. Hartmann, 1315 W. Fayette Street. Date of annual exhibition, December.
- PHOTOGRAPHIC SOCIETY OF PHILADELPHIA**—Philadelphia, Pa. Headquarters, 1722 Arch Street. Established November, 1862. Incorporated April 24, 1885. Membership, 160. Date of meetings, second, third, and fourth Wednesday, 8 P. M. *President*, C. Yarnall Abbott; *Secretary*, Edward H. Smith, 1722 Arch Street. Date of annual exhibition, February.
- PHOTO-PICTORIALISTS OF BUFFALO**—Buffalo, N. Y. Organized October, 1906. Membership, 8. Meeting, semi-monthly. *Correspondent*, W. H. Porterfield, 100 Lakeview Avenue.
- PHOTO-SECESSION**—New York, N. Y. Headquarters and Galleries, 291 Fifth Avenue. Continuous exhibitions November—April. *Director*, Alfred Stieglitz.
- PITTSBURGH ACADEMY OF SCIENCE AND ART (PHOTOGRAPHIC SECTION)**—Pittsburgh, Pa. Headquarters, Carnegie Institute, Schenley Park. Organized January 23, 1900. Membership, 100. Meetings, second Tuesday of each month at Club Rooms, 6017 Penn Avenue, and fourth Tuesday of each month at Carnegie Institute, except July and August. *President*, George B. Parker; *Vice-President*, R. D. Bruce; *Lantern Slide Director*, O. C. Reiter; *Print Director*, H. F. Walbridge; *Secretary-Treasurer*, J. M. Conner, Shetland and Finley Avenues, Pittsburgh.
- PORTLAND CAMERA CLUB**—Portland, Me. Headquarters, 571½ Congress Street. Established 1899. Membership, 90. Date of meetings, every Friday evening. *President*, H. A. Roberts; *Secretary*, O. P. T. Wish, 743 Congress Street. Date of annual exhibition, in February.
- POSTAL PHOTOGRAPHIC CLUB**—Headquarters, Washington, D. C. Established December, 1888. Membership, 40. Date of meetings, no regular meeting. *President*, Charles E. Fairman; *Secretary*, Gustavus A. Brandt, 631 Maryland Avenue, S. W., Washington, D. C. Albums circulate among members monthly, except August and September.

- PROVIDENCE CAMERA CLUB**—Providence, R. I. Established 1883. Incorporated 1889. Headquarters, 123 Eddy Street. Total membership, 104. Date of meetings, second Saturday of each month. *President*, C. W. Morrill; *Secretary*, H. Lord Walford, 55 Eddy Street; *Treasurer*, Homer Winslow.
- ROCHESTER CAMERA CLUB**—Rochester, N. Y. Headquarters, Wilder Arcade, Rochester, N. Y. *President*, W. B. Cline; *Vice-President*, J. A. Niven; *Treasurer*, Mrs. A. McMasters; *Secretary*, S. P. Hines; *Corresponding Secretary*, Mrs. Catherine Washburn.
- ST. LAWRENCE CAMERA CLUB**—Ogdensburg, N. Y. Headquarters, 26 Jay Street. Established 1900. Membership, 12. Date of meetings, at the call of the Secretary. *President*, Arthur L. Jameson; *Secretary*, John N. Brown, 26 Jay Street.
- SALON CLUB**—Fifty members. *Director*, W. H. Zerbe, 345 Spruce Street, Richmond Hill, L. I., N. Y.; *Secretaries*, W. and G. Parrish, 5607 Cobanne Avenue, St. Louis. Circulate monthly portfolios.
- SAVANNAH CAMERA CLUB**—Savannah, Ga. Disbanded.
- STRATFORD CAMERA CLUB**—Stratford, Conn. Headquarters, Stratford. Organized April, 1908. *President*, John Graham, Sr.; *Vice-President*, George Stein; *Secretary and Treasurer*, John Graham, Jr.; *Librarian*, George Poole.
- SYRACUSE CAMERA CLUB**—Syracuse, N. Y. Headquarters, Y. M. C. A. Building. Established 1886. Incorporated January 19, 1892. Membership, 101. Date of meetings, Friday evening of each week. *President*, J. E. Bierhardt; *Secretary*, M. L. Trowbridge, 216 Ulster Street.
- TOLEDO CAMERA CLUB**—Toledo, Ohio. Member of the American Federation. Headquarters, Museum of Art. Meets second Wednesday of month. *President*, John F. Jones; *Vice-President*, W. A. Ward; *Secretary*, C. C. Taylor, 3223 Cambridge Avenue; *Treasurer*, M. W. Chapin.
- TORONTO CAMERA CLUB**—Toronto, Canada. Established 1887. Incorporated 1893. Headquarters, 2 Gould Street. Membership, 180. Date of meetings, every Monday, from October to April, inclusive. *President*, Alfred Robinson; *Secretary-Treasurer*, Hugh Neison, 295 Carlton Street. Date of annual exhibition, March or April.
- TOWN AND COUNTRY CAMERA CLUB**—St. Paul, Minn. Established 1901. Date of meetings, every week, at which lectures and demonstrations are given pertaining to camera work. Outing excursions on May 30. *President*, George L. Nevins; *Secretary*, M. W. Wright, 2207 St. Anthony Avenue (Merriam Park), St. Paul. Exhibitions annually.
- TROY CAMERA CLUB**—Troy, N. Y. Headquarters, Room 250 River Street. Established February 22, 1904. Membership, 125. Date of meetings, first Monday each month. *President*, Herman Krause; *Secretary*, Albert A. MacNaughton, Box 58, Troy.
- VIRGINIA LEAGUE OF AMATEUR PHOTOGRAPHERS**—Richmond, Va. Disbanded.
- WISCONSIN CAMERA CLUB**—Milwaukee, Wis. Headquarters, 305 Enterprise Building. Organized, 1906. Meets every Tuesday. *President*, Dr. T. H. Perry; *Secretary*, R. P. Klumb, 427 18th Avenue; *Treasurer*, Dr. R. G. Washburn.
- WYOMING VALLEY CAMERA CLUB**—Wilkes-Barre, Pa. Headquarters, 72 N. Franklin Street. Meets every Tuesday evening, 8 o'clock. *President*, E. F. Ryman; *Secretary*, W. D. Brodhun, 267 S. Main Street. Exhibition annually in May.

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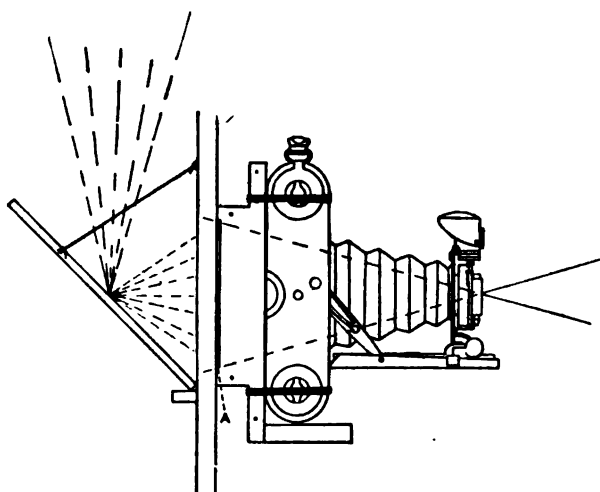
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Cold developed—no fussing with hot solutions.

Two Grades : Smooth and Rough.



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There's one paper that is made solely to meet the requirements of the amateur—a paper that has the quality that gives the best results from amateur negatives:—

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If you do your own printing, Velox will be easiest for you to work because it fits your negatives. If you have a professional finish your work, he can give you the best results on Velox—because it fits your negatives.

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are fitted with Graflex Focal Plane Shutter for exposures of any duration from time to 1/1000th of a second.

The reflecting mirror and focusing screen show the image right side up, the size it will appear in the negative, up to the instant of exposure.

Graflex Cameras from \$60.00 to \$190.00.

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FOR THE

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We conduct a complete up-to-date studio, and only employ artists of thorough experience and knowledge of the photographer's requirements.

Satisfactory specimens of our work will be found in many of the best studios throughout the world.

Our catalogue illustrating 400 attractive designs will be sent free on request.

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For any purpose, for any need

A Premo Camera

No matter what particular work you have in mind, there's a Premo which will best suit your requirements.

Pony Premos No. 6 and 7 are the highest types of hand camera construction. With long bellows draw, optically correct swing back and variety of special patented features, they will meet the requirements of the most exacting.

And there are Premos suitable for the beginner and the children, too.

Our catalogue describes over fifty different styles and sizes of Premos at prices from \$2.00 to \$200.00. Free at the dealers or mailed on request.

**Rochester Optical Division,
Eastman Kodak Company,
Rochester, N. Y.**



From the cutting of the seal to the developing of the film, simplicity is the very keynote of the

Premo Film Pack

Loading

Cut or break seal, open back of camera, drop in pack and it's done in daylight.

Exposing

Change film for successive exposures by merely pulling out from the top successive paper tabs.

Developing

Films may be automatically developed in the simple, inexpensive Premo Film Pack Tank, assuring the beginner as good negatives from every pack as the most experienced photographer could secure. And one or more films can be removed for development at any time.

Our illustrated catalogue describes this remarkable orthochromatic film method, shows how it will easily convert any plate camera into a daylight loading film camera and describes over fifty different styles and sizes of Premo cameras. Free at the dealer's or write us.

IMPORTANT—In writing, please be sure to specify **PREMO** Catalogue

Rochester Optical Division
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is the highest type of photographic shutter, including in ONE INSTRUMENT all the features of the different special shutters, as focal plane, between lens and silent shutter.

¶ THREE TIMES AS HIGH SPEED AS THE AVERAGE FOCAL PLANE. FAR AHEAD IN ILLUMINATION OF SAME, EVEN ON THREE TIMES HIGHER SPEEDS.

¶ AN INCREASE OF DEFINITION on all instantaneous speed from several seconds to 1/2000 part of a second.

¶ BULB AND TIME EXPOSURES.

¶ SILENT instantaneous, Bulb and Time exposures. SEPARATE DIAPHRAGM independent of blades. NO VIGNETTING on highest speeds.

TRY ONE

One Year's Guarantee. Two Weeks' Trial

Regular shutter for film and plate cameras

Professional shutter for plate cameras

Reflecting shutter for reflecting cameras

Small shutter for 3, 3A, 4 Kodak, 4x5 and 5x7 cameras

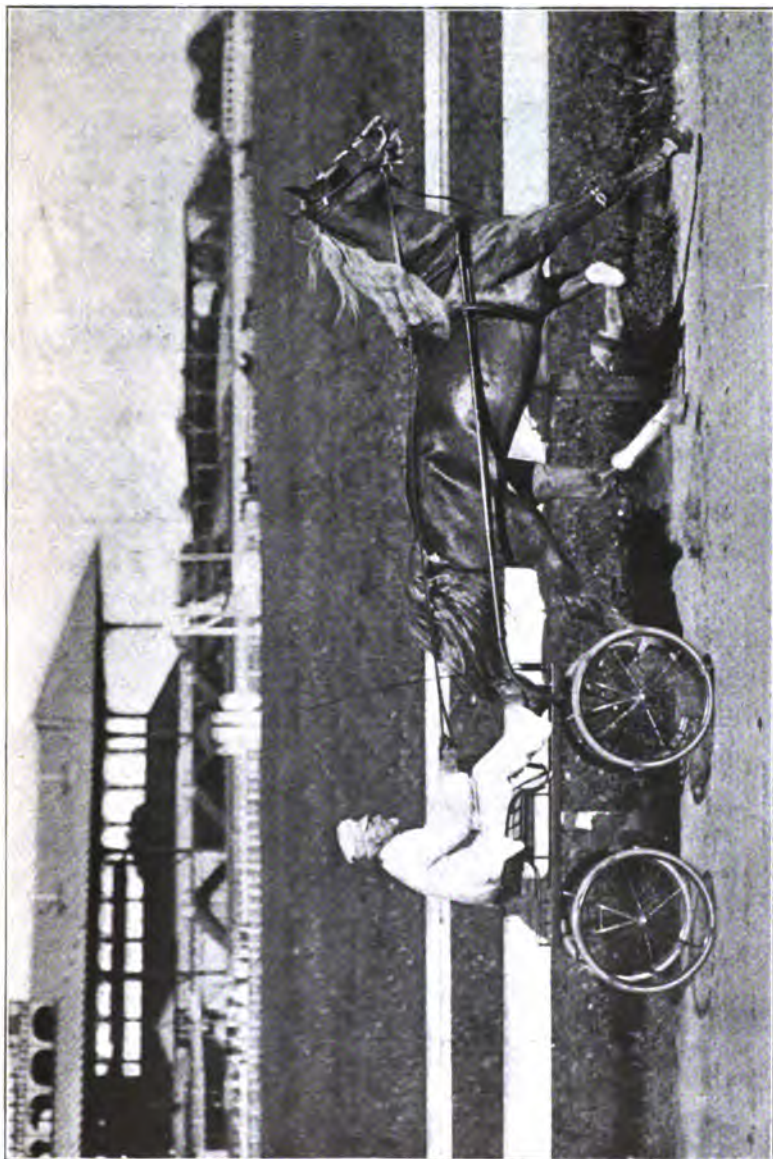
Medium shutter for 4A Kodak, 5x7 and 6½x8½ cameras

For further particulars apply through your dealer or direct to

MULTI SPEED SHUTTER CO.

Note New Address: 159-161 W. 24th St., New York City

**Contact Print from a negative made with a 10½-inch focus
TURNER-REICH Lens and Multi-Speed Shutter. 1/1000th sec.**



See Announcement of Multi-Speed Shutter on preceding page

CAMERAS AT HALF PRICE



WERE you thinking of a Camera or Lens? Let us help you. We have built up a very large business in buying, selling and exchanging all *good* kinds of cameras and lenses. We do not handle the unsatisfactory makes, but we can almost always

SAVE YOU FROM A QUARTER TO A HALF

on any of the well-known and well-tried cameras. The greater part of our vast camera stock was purchased before January 1st, therefore giving our customers the benefit of low prices. Wholesalers and Manufacturers are charging very much greater prices right now. We have a little book that gives details. Every sentence in it holds a bargain. Some of the cameras offered are second-hand ones, but not by any means all of them. And the second-hand ones are just as good as ever and generally the best values. Send us a two-cent stamp and we'll send the book. We'll buy your camera, if you wish, if it's a good one, in good condition.

Agents for ARTURA, CYKO, ARGO, and all other
Brands of PRINTING OUT and DEVELOPING
PAPERS, and all Brands of DRY PLATES.

Agents for the NEW IMPROVED REFLEX CAMERA

NEW YORK CAMERA EXCHANGE

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STRATHMORE CHAMELEON COVERS

have advantages for photographic work too self-evident to require remarks from us.

¶ This sample is No. 972. Three other items. Size 22x28. For sale by photo and paper houses.

¶ Sample book on request.



Mittineague Paper Company

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Bausch & Lomb-Zeiss Lenses

ARE the product of all the facilities and resources of the **CARL ZEISS WORKS**, coupled with the advantages of American skill and ingenuity.

¶ For more than a generation physicists trained in the special branch of optics have been devoting their energies to working out the problems connected with the production of more perfect optical appliances. A staff of 46 specialists is at present engaged in this task, and the world is gaining every day from their efforts.

¶ With the help of this staff in Jena supplemented by our own here, we claim for our lenses the perfection due to:

The most exact mathematical calculations

The most scientific methods of construction

The use of Jena glass which was first produced
in collaboration with the Zeiss Works.

¶ We shall be pleased to send you our complete Photographic Catalog on request. Also special circulars on **TESSAR LENS** and **Compound Shutter**.



Our Name on a Photographic Lens, Microscope, Field Glass, Laboratory Apparatus, Engineering or any other Scientific Instrument is our Guarantee.

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COLLODION
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Full Directions enclosed.

Made in Three Carbon Grades
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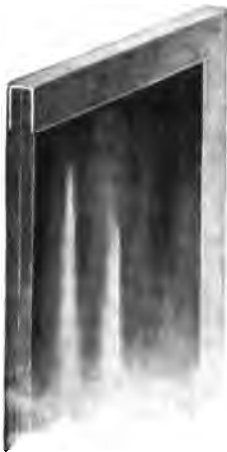
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Perfect Prints, The Simple Art of Picture Making and
The Barnet Ortho Hand Book. Also Price List.



MAX LEVY'S SCREENS

STILL REMAIN THE STANDARD

THE CIRCULAR SCREEN in the *rotary holder* and the *Recessed Aluminum Frame* on all other screens, constitute the latest and highest developments in screen production.



Aluminum Frame.



Circular Screen Holder.

ECONOMIC SCREENS; RULED, BUT NOT ETCHED
Price one-half list on engraved screens.

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CARL ZEISS

CONVERTIBLE PROTAR

NEW—SERIES IV—NEW

Since the introduction of the Carl Zeiss Convertible Protar, Series VIIA, in 1895, the demand for anastigmatic convertible lenses has steadily increased. While the Protar, Series VIIA has fulfilled the highest requirements, its complicated construction and costly manufacture necessitated a somewhat high price, which put it beyond the reach of many workers.

To meet this difficulty Dr. Paul Rudolph, after lengthy experiments with entirely new kinds of glass, has found it possible to produce an objective with the same wide range of usefulness and equal in efficiency to the Protar VIIA at a more moderate price—the Carl Zeiss Convertible Protar, Series IV.

The new Protar-lens, Series IV consists of six cemented elements instead of the eight in Series VIIa. As a symmetrical doublet, Protar, Series IV has a rapidity of F6.3. As an unsymmetrical doublet, combining two Protar-lenses of unequal focus, its rapidity is F.7. Used singly, each element has a rapidity of F12.5.

The Double-Protar is recommended for all kinds of Instantaneous Photography, Portraiture and Groups, Architectural and Interior Work. The Single Protar is adapted for Landscape and all Outdoor Work where great focal length is desirable.

Full particulars are given in the Special Protar Leaflet which we will be glad to send on request.

E. P. Meyrowitz

Sole U. S. Agent for
Carl Zeiss

Lenses Made in Jena

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ARTURA **IRIS**

**The paper that
produces perfect
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ALWAYS RELIABLE and UNIFORM

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from Columbus on Postal request.**

“Fallowflex”

The finest up-to-date Reflex Camera, fitted with many extras not found in similar cameras at double the price. Wholly made in England and embodying the result of much experience and experiment. Made in four popular sizes, viz.:

4½ x 3½ £9-0-0
 5 x 4 £12-0-0
 Postcard £12-17-6
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 without lens



The “Fallowflex” is fitted with Patent Focal-plane shutter set from the outside to any required speed by a single half-turn of winder on right-hand side of camera.

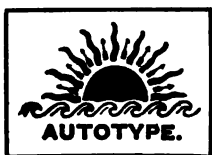
The Special Pivoted and Sliding Mirror (Nichol's Patent), is another unique advantage of the “Fallowflex.”

Special Model “Fallowflex” for tropical and press photography, strongly built of teak, brass bound, and other special features, £15-0-0.

Send for our List before you buy a reflex camera. We send our cameras all over the world.

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Seven New Seplas. Six New Transfer Papers

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For Photogravure, Ceramic, Three-color

Autotype Spirit Sensitizer

Ready for Use. Dries in three minutes

Autotype Border Negatives
Texture Films

Bromoil Process

Printing Papers, Brushes, Pigments

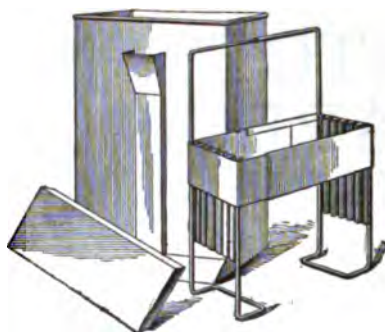
The "Oil and Bromoil Process," copy, 50c.

GEORGE MURPHY, Inc.

57 East Ninth Street

Agent

NEW YORK



No. 1 to No. 10

Eagle Adjustable Developing Tank

(Patented)

For Professional and Amateur Use

Be up-to-date. Use the Tank Method of developing now advocated by the highest authorities.

The Eagle Tank is practical, economical and adjustable to all size plates.

Use only the Eagle Adjustable Tank and thus make sure you get perfect results.

To develop cut films in the Eagle Adjustable Developing Tank use the Eagle Cut Film Carrier.



No. 11, No. 12 and No. 13

| Zinc for Developing Only | Extra Racks |
|---|---------------|
| No. 1 for 12, 3½x4½, or lantern slide..... | \$1.00 \$0.65 |
| No. 2 for 12, 4x5, 3½x3½, 3½x4½, or lantern slide..... | 1.00 .75 |
| No. 3 for 12, 5x7, 4½x6½, 4x5, 3½x4½, or lantern slide..... | 1.50 .90 |
| No. 4 for 12, 6½x8½, 5x7, 4x5..... | 1.75 1.00 |
| No. 5 for 12, 8x10, 6½x8½, 5x7..... | 2.00 1.10 |

| Nickel Plated Tank for Developing, Fixing and Washing | Extra Racks |
|---|---------------|
| No. 6 for 12, 3½x4½, or lantern slide..... | \$2.00 \$1.00 |
| No. 7 for 12, 4x5, 3½x3½, 3½x4½, or lantern slide..... | 2.00 1.25 |
| No. 8 for 12, 5x7, 4½x6½, 4x5, 3½x4½, or lantern slide... | 3.00 1.40 |
| No. 9 for 12, 6½x8½, 5x7, 4x5..... | 3.50 2.00 |
| No. 10 for 12, 8x10, 6½x8½, 5x7..... | 5.00 2.25 |
| No. 11. Professional size for 48, 5x7 and smaller..... | 6.00 2.00 |
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Eagle Tank Developing Powders

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| Per Package (6 powders)..... | \$0.25 |
| Eagle Tank Thermometer..... | .55 |

Cut Film Carriers

| | |
|--------------------------------------|-----------|
| 2½x3½—3½x4½—3½x5½—4x5, any size..... | each 15c. |
| 5x7 size..... | 20c. |

GEORGE MURPHY, Inc.
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Kruxo Papers

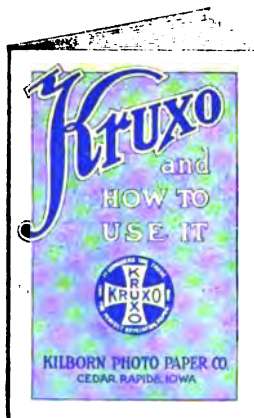
are
made by men
who are professional
photographers as well as prac-
tical chemists. This combined

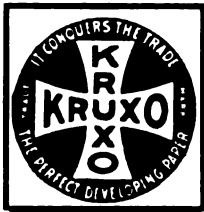
knowledge of art and science ex-
plains why Kruxo papers yield the
best results, whether judged from
an artistic or from a technical stand-
point. See next page.

This Booklet is Free

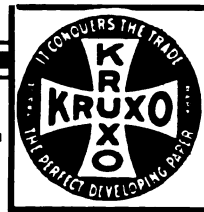
It tells how photographic chemi-
cals act; how to modify developer for-
mulas to obtain special effects; how
to print from wet negatives; how to
do double printing; how to select the
right paper for each negative; how
to obtain Sepias in first development.

KILBORN PHOTO PAPER CO.,
79-89 First Avenue,
Cedar Rapids, Iowa.





The Only Paper



that yields true Sepias in first development

IS KRUXO

¶ The first and only process that yields true Sepia tones in first development was originated by the manufacturers of Kruzo papers.

¶ Kruzo Sepias, at half the cost and trouble, are equal to Carbon and Platinum Sepias--- results are certain and permanent.

¶ Black and White or Sepia prints are made on Kruzo paper out of the same box simply by varying the exposure and the strength of the developer.

ACME-KRUXO

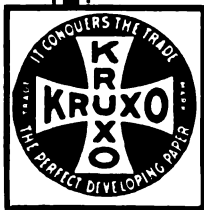
¶ Takes the place of printing-out paper for professional use. It has great latitude, and gives soft, brilliant prints from any negative.

A SPECIAL OFFER

¶ Upon receipt of 10 cents we will send a liberal package of samples, including ready-mixed developers. State whether for professional or amateur use.

KILBORN PHOTO PAPER CO.,

79-89 FIRST AVENUE,
Cedar Rapids, Iowa.

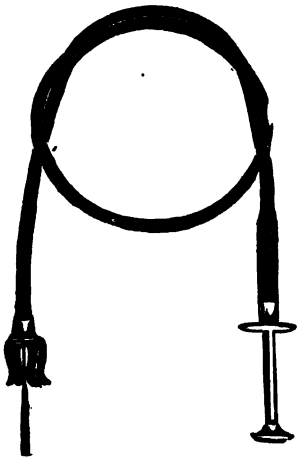


THE WATSON PATENT

Antinous Shutter Release

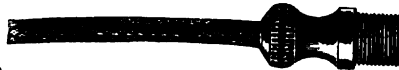
Suitable for Kodak, Automatic, Sector, Kollos,
Compound, Wollensak and Roller Blind Shutters

As Convenient as it is Reliable



¶ The Antinous Release is a mechanical means of operating shutters. All its working parts are of metal. There is no rubber or perishable material to render it unreliable. It takes up much less space than the ordinary rubber tube and ball.

¶ It never fails, will last a lifetime. Get one and experience the satisfaction of a dependable release.



For Goerz Sector Shutters



For Shutters with projecting trigger
operated by pull down movement



For all Roller Blind Shutters



For Bausch & Lomb, Wollensak, Kodak
and latest pattern compound Shutters



For Kollos Shutter

PRICE \$1.00

ALWAYS SURE!

NEVER FAILS!

AGENTS

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57 East Ninth Street

NEW YORK

Eagle HIGH- GRADE Backgrounds



WE call your attention to this new line of Backgrounds which has become very popular, and we have in stock all the grounds shown in our catalogue—eighteen different designs—and they can be furnished in light desired to suit studio. In ordering it would be well to state on what side of the sitter the light strikes, and whether the tint is to be light, medium or dark.

The Backgrounds are furnished in distemper or in oil; they are also furnished with extension in distemper or in oil as desired. The stock sizes are as follows:

Regular, 8 x 8 with 7-ft. extension

Studio Size 8 x 10

Group Size 8 x 12

Group Size 8 x 15

Special sizes made up and promptly delivered.

Send for illustrated booklet showing designs. Your orders solicited.

GEORGE MURPHY, Inc.

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PAASCHE AIR BRUSHES

SUITABLE FOR
All Grades of work

Simple, Durable; will not get out of order. Guaranteed.



Model "A" Brush

MODEL A.
For portrait artist, photographers and designers Price, **\$25.00**

MODEL B.
For mechanical, monumental, commercial designing Price, **\$8.00**

MODEL C.
Same as Model A, but with thumb action. Price, **\$8.00**

MODEL D.
For oil paintings, bronzes, fresco colors, and heavy pigments **\$2.00**

MODEL E.
For signs, show cards, postal cards, calendars, leather novelties,
artificial flowers and fixtures **\$4.00**

MODEL F.
For coloring souvenir postal cards, novelties, show cards, signs and
portrait draperies **\$5.00**

MODEL H.
For sign work, background advertisements, posters, artificial flowers
and fixtures **\$2.50**

FOOT PUMP OUTFIT.
Air-Pressure Outfit complete, consisting of Foot Pump, extra heavy
tank with air gauge, fittings and 10 ft. rubber hose **\$12.00**
Foot Pump only **7.00**
Tank, extra heavy, tested for 40 lbs., with hose fittings **2.45**
Tank, extra heavy, tested for 40 lbs., with air gauge and fittings **4.75**
Weight packed for shipment, 35 lbs.

LIQUID CARBONIC GAS OUTFIT.
Consisting of air regulator, air gauge, wall clamp, wrenches, fittings,
and 8 ft. 1/4-inch air brush tubing **\$10.00**

GEORGE MURPHY, INC., 57 E. 9th Street, New York

MOUNTS

We have the largest stock of Photographic
Mounts in the United States.

Can supply anything wanted. If we do not
have it in stock, we can make it up for you.

Write and let us know your wants.

Exclusive designs for Photographers a specialty.

THERMOMETER STIRRING ROD

This is a very handy article as it enables one to determine the temperature of the solution at the same time that the chemicals are dissolving. Temperature is a very important matter in solution, especially in tank development. This is a solid glass stirring rod $\frac{1}{4}$ -inch in diameter and $9\frac{1}{4}$ inches long with one end flattened out so as to make a broad surface for crushing crystals that may not dissolve readily.

The Thermometer is built inside of the glass stirring rod. Packed in a neat wooden box. Price 50c.

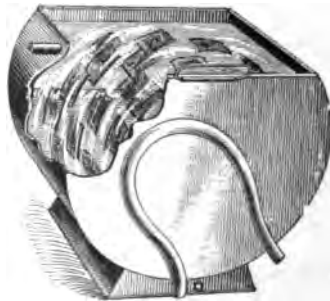
ROYAL PRINT WASHER

The peculiar construction of this washer is such that the prints are made to revolve by the pressure of the water entering the washer.

The water enters the washer through the inlet tube in such a way that it is forced against the side of the washer and made to revolve around and around, carrying the prints with it.

The speed at which they can revolve can be regulated by the amount of water entering the washer. The water is siphoned off through the bottom of the washer so that the water in the washer is constantly changing, flowing in at the top and being drawn off at the bottom.

The Royal Washer is made of heavy zinc throughout.



| No. | Length | Diameter | Price |
|-----|--------|----------|--------|
| 1 | 12 | 12 | \$3.00 |
| 2 | 18 | 15 | 5.50 |

GEORGE MURPHY, Inc., 57 East 9th St., New York

Star Negative File

(Patented July 16, 1900)



For Storing Negatives or Films

A perfect means of storing and filing for ready reference, plates or films. Each box is indexed and holds 50 negatives or a larger number of films.

| | | | |
|---------------|--------|----------------------------|--------|
| 3½ x 4½ | \$0.30 | 6½ x 8½ | \$0.65 |
| 4 x 5 | .35 | 8 x 10 | .75 |
| 5 x 7 | .45 | 3½ x 4 For lantern slides. | .30 |

Eagle Dropper Bottle



For measuring drops of any chemical.

The only way to get an accurate drop.

Be accurate, and use one for your Bromide Solution.

Simple to use, just press the rubber cork.

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|------------------|-----|------------|-----|
| 1 ounce size, \$ | .15 | Postage \$ | .05 |
| 8 " " " | .25 | " " " | .15 |

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57 East 9th Street,

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GRAFLEX

Cameras, Anastigmat Lenses, Compound and Multi-Speed Shutters, KODAKS, Metal Tripods.

Everything Photographic.

Send stamp for New Photo BARGAIN LIST.

Willoughby & A Square Deal, 814 Broadway, New York.



ROYAL CARBIDE

DEVELOPING AND PRINTING LAMP

NO GAS—NO OIL

Always ready for use, simply place carbide in the chamber, and fill tank with water. This lamp has numerous advantages over the old style dark room lantern. There is practically no heat and the oxygen in the air is not absorbed by the use of this lamp. The flame is round, steady and white, making it more actinic than any other.

The Royal Carbide Lamp with sufficient Carbide for six hours' use, \$1.50 Postage 25 cents.

Elmendorf Lantern Slide Colors

Prepared by Dr. Elmendorf, the acknowledged authority on lantern slides, whose superbly colored slides are famous all the world over.

Supplied in ten colors, the combinations of which will produce all the colors of nature.

These colors are put up in concentrated form, each box containing one bottle of the following colors.



No. 1 Light Yellow, No. 2 Dark Yellow, No. 3 Orange, No. 4 Rose, No. 5 Vermillion, No. 6 Brown, No. 7 Maroon, No. 8 Gold Green, No. 9 Blue, No. 10 Violet.

PRICE PER SET, \$1.50

| | | |
|--------------------------|-----------|--------|
| Small bottles, any color | \ | \$0.30 |
| Large " " " | | .30 |

GEORGE MURPHY, Inc.
57 EAST 9th STREET **NEW YORK**

THE EAGLE Flash Lamp

(Patented)

This lamp is built for practical professional use. Will give more light with the same amount of powder than any other lamp on the market. Special Accident proof powder igniter. Blue Umbrella, bulb release and special pan arrangement.

EAGLE Jr. FLASH LAMP

Intended for Home Portraiture

The Eagle Flash Lamp outfit complete, including lamp, stand, blue umbrella, bulb and 15 feet tubing, caps and flash powder, \$15.00.

| | |
|---|---------|
| Eagle Flash Lamp complete with Flash Bag (no umbrella) | \$23.50 |
| The Eagle Flash Lamp Stand only | 6.00 |
| Umbrella made of a special blue cloth | 1.50 |
| Eagle Flash Lamp caps in a tube | .05 |
| Handles for Eagle Flash Lamp | 1.00 |
| Eagle Junior Flash Lamp outfit complete including Lamp Stand, umbrella, bulb, tubing, flash powder and caps | 10.00 |
| Eagle Junior Flash Lamp complete with Lamp, Stand, Flash Bag, bulb, tubing and caps, no umbrella | 12.50 |



EAGLE FLASH BAG

For Collecting Smoke and Dust

Made to fit either the Eagle or Eagle Jr. Flash Lamp. The Eagle Flash Lamp equipment with Eagle Flash Bag is an ideal outfit for indoor photography.

| | |
|--|---------|
| Eagle Flash Bag, only | \$10.00 |
| Eagle Flash Bag and Eagle Flash Lamp, complete | 23.50 |
| Eagle Jr. Flash Bag and Eagle Jr. Flash Lamp, complete | 12.50 |

Send for descriptive booklet



GEORGE MURPHY, Inc.

57 EAST 9th STREET

NEW YORK



BE YOUR OWN SALESMAN

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215 WATER ST., NEW YORK



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CHEMICALLY PURE
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MADE ESPECIALLY FOR PHOTOGRAPHIC PURPOSES.

ABSOLUTELY LINTLESS.

CARRIED IN STOCK IN

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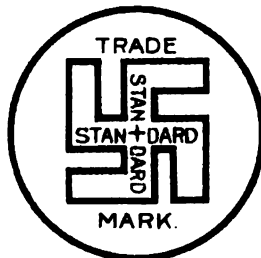
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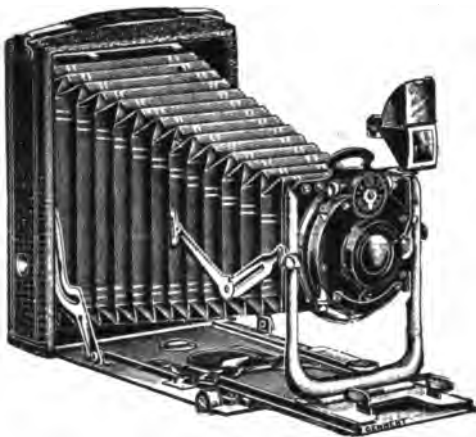
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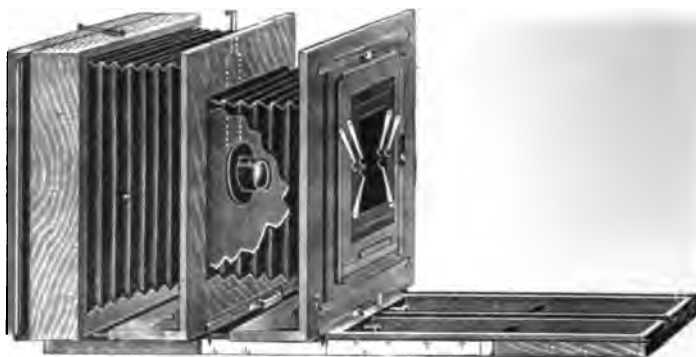
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